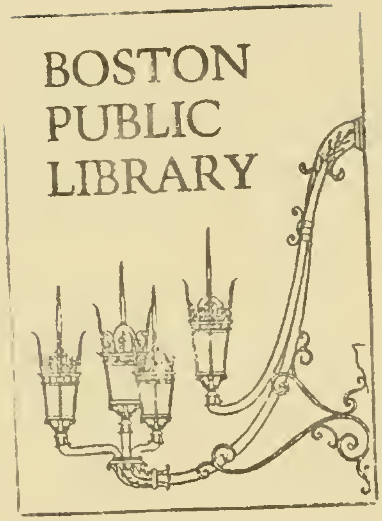

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FINAL ENVIRONMENTAL IMPACT REPORT FOR

DEWEY SQUARE OFFICE BUILDING

HMM ASSOCIATES, INC.

Final Environmental Impact Report for Dewey Square Office Building

HMM Document No. 81-249

March, 1981

Prepared for:

Rose Associates
522 Fifth Avenue
New York, New York 10036

Prepared by:

HMM ASSOCIATES
255 Bear Hill Road
Waltham, Massachusetts 02154

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A. EIR SCOPE FOR THE DEWEY SQUARE OFFICE BUILDING

1. INTRODUCTION

This document is the Final EIR for the proposed Dewey Square Office Building. The site for the building, which is located at Dewey Square, adjacent to South Station, in Boston's Central Business District, has been cleared for redevelopment. It is currently occupied by a surface parking lot, part of Atlantic Avenue, and by the DPW Expressway Ventilation Control Building.

The project entails development of a 46-story highrise tower with over one million square feet of floor area. The upper 44 stories will provide Class-A office space. Limited parking, retail and public assembly areas will be provided on the lower levels, and an atrium is planned on the north side of the building, facing Summer Street. The nature of the project and the potential for environmental impacts associated with its development are outlined in detail in the Draft Environmental Impact Report for the Dewey Square Office Building. This Draft EIR was filed in October 1980.

The Final EIR has been prepared pursuant to the Executive Office of Environmental Affairs (EOEA) Regulations governing the implementation of the Massachusetts Environmental Policy Act (MEPA), General Laws, Chapter 30, Sections 62 to 62H inclusive. This Final EIR contains all comments received from State and local agencies and from the general public. Responses to these comments have been drafted by the project proponent. Since no substantial changes to the project have been undertaken, the Draft EIR is not being recirculated with, or as part of, the Final EIR.

Subsequent sections of the Final EIR are as follows:

Section 2, Comments on the Draft EIR

In this section, the proponent has included copies of all comments received on the Draft EIR. Comments were received from four agencies, including the EOEA. No comments were received from private groups or citizens. The authors of the comments are:

- The Secretary of the Executive Office of Environmental Affairs (EOEA)
- The Boston Redevelopment Authority (BRA)
- The Metropolitan Area Planning Council (MAPC)
- The Massachusetts Bay Transportation Authority (MBTA)

In the margins of these comments the proponent has placed circled numbers (i.e. (1), (2), etc.). These numbers are used as a key to the proponents' responses in the subsequent section.

Section 3, Responses to Comments

In this section, the proponent has responded to each of the comments submitted. Responses include clarification of statements made in the Draft EIR, corrections to errors in the Draft EIR, and descriptions of additional efforts undertaken in response to comments.

Section 4, Additional Information

This section includes supplementary information requested by the agencies. This information includes changes in project design since the submission of the Draft EIR, and new studies undertaken during the preparation of the Final EIR. The new studies were undertaken either to respond to comments, or to explore the potential for impacts associated with design modifications.

2. COMMENTS ON THE DRAFT EIR

The Commonwealth of Massachusetts
Executive Office of Environmental Affairs
100 Cambridge Street
Boston, Massachusetts 02202

ARD J. KING
GOVERNOR

N A. BEWICK
SECRETARY

CERTIFICATE OF THE SECRETARY OF ENVIRONMENTAL AFFAIRS

ON

DRAFT ENVIRONMENTAL IMPACT REPORT

PROJECT NAME: Dewey Square Office Building

EOEA NUMBER: 03810

PROJECT PROPONENT: Rose Associates

DATE NOTICED IN MONITOR: December 8, 1980

The Secretary of Environmental Affairs herein issues a statement that the Draft Environmental Impact Report submitted on the above-referenced project does adequately and properly comply with Massachusetts General Laws, Chapter 30, Section 62-62H inclusive, and the regulations implementing MEPA.

The Draft Report represents a worthy effort to assess the environmental impacts from the proposed new Dewey Square office tower. With the exception of some of the discussion of wind effects, the report is quite clear and readable while also conveying the necessary technical information. The comments below and those of other agencies and individuals commenting on the Draft Report should be responded to in the Final Report. The EOEA Scope issued on July 23, 1980 should also be included.

WIND ANALYSIS

The technical anlaysis of the site, with and without the new office building, appears quite thorough and competent. The presentation and evaluation does warrant some improvement, with a step-by-step development of the analysis elements similar to the transportation section of the EIR.

Some assessment of modeling accuracy should be provided. For example, sportation traffic counts are accurate to ± 5%, while the projections raffic may result in accuracy of 10%. From experience, how accurate is actual wind tunneling and transcribing of data? Wind tunnel modeling lves both a change of physical scale and time scale, so that calibration uch models should be discussed both in terms of ability to predict actual speeds and the ability to predict relative changes from build and no-d conditions.

Comfort criteria deserve a clearer explanation, possibly in tabular form. s understood that criteria often appear inexact or conflicting due to :lusions from different sources. Ideally, criteria should be a function of:

- Average wind speed and annual duration/frequency
- Variations in speed and direction, and the oscillating frequency
- Activities (walking, sitting, etc.)
- Individual (healthy office employee, elderly, handicapped, etc.)

report discusses wind conditions in terms of 1% and 20% occurrences, yet) discusses events occurring once a month and once a year, with different sentations for each. The diagram, which should unify these concepts, Fig. 6.1-7, too small and difficult to read. What is the shaded area? Where is location on the top diagram? Location 26 on the middle diagram?

One measure of wind impact which should be discussed is the relative change n existing conditions. Because wind force is proportional to V-squared, it be desirable to present the differences as a percentage increase or decrease V-squared.

The EIR summarizes the impacts (p. 2-2) as beind "windier after development" "consistent with the wind climate near other existing tall buildings..." ortunately, the wind climate near several tall buildings in Boston is un-irable, hence the need for consideration of wind impacts in an EIR. Will Dewey Square building be accessible to the handicapped and if so what ewalk wind level criteria are applicable?

Another sidewalk level impact related to highrise experience in Boston loss of windows due to the direct wind forces against the building and the irect effects of building sway. What is the maximum sway planned for the office tower (frequency and amplitude) and what provisions or design cautions are planned to minimize loss of windows?

Finally, the ultimate presentation of data on wind impacts is not very ear. The EIR has made an honest and a varied effort to present the impacts both graphical and tabular form, but the real effect for the pedestrian compared existing conditions does not appear vividly. The Tables show clearly that ees have a positive effect (especially near South Station) and a detrimental ect at other locations. The most useful contribution the EIR can make will be identify mitigating actions that might be taken to reduce wind effects:

- * trees: type, location and randomness
- * Building treatments, especially along the Essex Street side which might reduce downwash effects of wind and the explanation for the large wind effects on the opposite side of Essex Street from the new Tower. Would canopies help wind conditions, and if so, where? ①

NSPORTATION

The effort to achieve 90% transit ridership is encouraging in terms of uced auto trips in a congested area. Dewey Square does have the advantages of nsit access by subway, commuter bus, MBTA bus, and commuter rail. Due to the sting on-site parking, sutos coming to the site should not represent a nificant increase in auto-related impacts. Provisions for parking at the th Station EIR of the MBTA and BRA include full analysis of the traffic related acts of such parking. ②

The widening of Essex Street appears excessive and a detriment to ped- rians. Because part of the Tower project area is being transferred to provide an Essex Street widening, some explanation should be offered (at least in ms of city policy) for the extensive areas given over to highway pavement and minimal areas available for pedestrian uses and landscaping. There does not ear to be any traffic capacity justification for a street so wide. ③

A plan should be shown of pedestrian crosswalks around the site with ropriate neckdown areas at crossing points. ④

The transit access analysis is an excellent example of an orderly, well ructured analysis which surprisingly covers much new ground.

Obvious questions do arise about the concluding analysis shown in Table 6.3-9, ich suggests that the existing Red Line is operating at only 51% of capacity in e peak hour. What peak hour factors should properly be applied to existing TA operations? How is existing transit line congestion explained in terms the optimistic data in the Draft EIR? If the Red Line transit peak can be entified for AM and PM conditions, would there be a possible way of scheduling fice hours at the new Dewey Square tower so as to apread the new transit rider- ip on one or the other (or both) sides of the transit peak? ⑤

Table 6.3-9 should be clarified in terms of which peak-hour is being referred , AM or PM, and which direction of flow is listed. In some cases, the office wer employees may travel with the direction of the peak transit flow and in her cases they may travel against the peak flow. ⑥

Regardless of the actual capacity and congestion conditions on the isting transit system, Table 6.3-9 is useful in terms of providing relative

mates of increased ridership at South Station and other points on the sit system. For example, ridership North of South Station would increase 8% and ridership South of South Station would increase by 6%.

TRUCTION IMPACTS

The noise assessment on pages 6-67 ff appears to underestimate the cts of noise levels generally. Commonly-accepted standards are that ⑦ eases of 9 to 10 decibels are perceived as an effective doubling of the noise l. Thus a 4 dBA increase in noise represents a 34% increase in noise, which is ly an "imperceptible change in noise level."

The most affected locations will be buildings along Essex St. and particularly Essex Hotel. Estimated noise levels 100 ft. from the site are 85 dBA pedestrians, because of their short exposure to the noise and quick pass-ugh of the area, should not be substantially affected by the noise. However, dents of the Hotel Essex could be noticeably affected, since construction e could start at 7:00 AM or earlier. The closed window/air conditioned nature ⑧ he Hotel will be important to provide noise reduction and less dust intrusion, nevertheless the situation should be closely monitored by the proponent and communications maintained with the Essex Hotel to insure that construction cts are kept to a minimum.

Construction dust during excavation will be primarily a function of operating n, covered trucks in a manner so that mud and dirt will not be tracked out onto cent streets. Any vehicles leaving the site during the excavation period ⑨ ld do so via an access road surfaced with a reasonable amount of crushed stone. ract commitments to this effect should be made, so that unfortunate experiences ther downtown construction sites can be avoided.

GY SAVINGS

Will the exterior of the building be permanently sealed, or will there be opportunity for fresh air ventilation? Also, given the recent concerns over rise building safety, what provisions are being made so as to avoid the ex- ⑩ ence of the Government Center State office buildings, whereby building areas sed to the sun are overheated and areas away from the sun are much too cool?

JOHN A. BEWICK, SECRETARY

SK:cg

MASSACHUSETTS
BAY
TRANSPORTATION
AUTHORITY

50 High Street, Boston, MA 02110

January 5, 1981

RECEIVED
JAN 7 1981
OFFICE OF THE [illegible]
ENVIRONMENTAL A[illegible]

Secretary
Executive Office of Environmental Affairs
100 Cambridge Street (20th Floor)
Boston, Massachusetts 02202

Attention: MEPA Unit: File No. 03810

Gentlemen:

Pursuant to the Massachusetts Environmental Policy Act and governing EOEA regulations, the Massachusetts Bay Transportation Authority has received and reviewed for comment the Draft Environmental Impact Report for Dewey Square Office Building. The MBTA responds that the multi-purposed development proposed by Rose Associates will be beneficial to the South Station area. It will upgrade the underutilized area (parking lot) across Atlantic Avenue from South Station, and it will contribute to the prosperity of the South Station Transportation Center as well. The increased demand directly related to the Rose Associates' development will transfer proportionately into increased transit ridership, which the Authority encourages and, therefore, the MBTA supports the development of the Dewey Square Office Building.

There are two concerns, however, which the MBTA feels warrant comment. Of grave concern is the increased wind speed at pedestrian level which will result from the office building construction although, historically, the vicinity of South Station has been characterized by strong winds and gustiness. As most pedestrian traffic is in some way related to South Station transportation activity, this increased wind impact should receive careful consideration, and further clarification of this impact relative to pedestrian comfort is requested, as well as additional mitigating measures to reduce the projected impacts. ⑪

Secondly, as the DEIR discusses the initial phase of construction (Sec. 3.4.1 Phase 1: Excavation and Foundation), the Expressway Tunnel at Dewey Square is mentioned. However, there is no mention of the MBTA Red Line Tunnel, which is also in the vicinity of the proposed construction. Should it be assumed that the Red Line Tunnel lies outside the sphere of influence which results from the massive load at the office building, or, what affect, if any, will the Dewey Square building's settlement have upon the tunnel structure? Also, will there be conflicts with the MBTA subway construction which may occur within the same time frame as the proposed development. ⑫

The MBTA believes that these concerns may be addressed by carefully coordinating planning with the appropriate MBTA staff, including this office. Again, the Authority feels that the Dewey Square Office Building will upgrade the aesthetic environment of the South Station area and will complement the South Station Transportation Center Development.

Very truly yours,

Charles B. Steward
Environmental Coordinator

CBS/CLC/ab

cc: W. R. Buckley
R. C. Zellen
R. A. Mancini

mapc Metropolitan Area Planning Council 44 School St. Boston MA 02108 Tele 617/523-2454

December 31, 1980

he Honorable John J. Bewick
xecutive Office of Environmental Affairs
00 Cambridge Street
oston, MA 02202

Re: Dewey Square Office Building, EOEA #03810
(MAPC #EIR-81-2, Received November 28, 1980)

ear Secretary Bewick:

In accordance with the provision of Chapter 30, Section 62 of the Massachusetts eneral Laws, the Metropolitan Area Planning Council (MAPC) has reviewed the above eferenced draft environmental impact report.

This draft report represents an indepth analysis of the potential environmental impacts resulting from the proposed Dewey Square Office Building. MAPC concurs with he merits of the project and commends its developers and architects on their efforts o identify and minimize potential impacts. The proposed development is a welcome ddition to the Boston skyline. However, the Council also feels that there are two issues which should be addressed in the final report. They include: probable conflict ith proposed alternative improvements to the Dewey Square tunnel portion of the entral Artery, review of possible traffic and parking impacts should the proportion f public transit commuters to the building not be as high as projected. In addition, a clarification is needed regarding the measures which were identified as ways to inimize environmental impacts.

With respect to the Central Artery, several alternatives for improvements to the Dewey Square tunnel involve expanding the tunnel into the project site. A conflict may exist between at least one alternative and the lower levels of the office building. John Kessler and Scott McCandless, a lawyer and an architect for the developer of the Dewey Square Office building were contacted regarding this matter. Both indicated that extensive discussions were held with the state Department of Public Works (DPW) to avoid any potential conflicts. These meetings resulted in changes in the initial design of the building as well as approval of the Project Manager for the state DPW. However, according to Jack Gardner, an engineer at the DPW, changes in the Central Artery improvements proposed for the Dewey Square tunnel have occured since the DPW officials met with the architects and lawyers of the developer of the office building were notified of the changes made and the conflicts created. However, no response was received.

There appears to be a lot of confusion between the staffs of both the Central Artery and the Dewey Square Office Building projects regarding this matter. Since both projects represent substantial investments, the Metropolitan Area Planning Council recommends that both parties involved meet to clear up the confusion, finalize commitments to one another and outline those agreements in the final environmental impact report. MAPC is strongly opposed to the widening of the Dewey Square tunnel because of its impact on this development as well as other businesses. Hopefully, the widening of the tunnel can be eliminated from further consideration. ⑬

The second issue which MAPC would like addressed further is automobile mpacts. The report adequately assesses maximum impacts on public transportation, s requested in the scoping session using a modal split of 10 percent auto and 90 ercent transit. However, MAPC feels that the assumptions used for this analysis re not necessarily the same as those one would use when assessing potential autoobile impacts. In doing so, the automobile impacts identified in the report may end to more closely approximate minimums rather than maximums, a more useful estimte. ⑭

The report does mention that a parking facility is being constructed above he adjacent South Station Railroad Terminal. THis facility may increase the vailability of parking in the area more than anticipated when the draft report as written. Most recent estimates provided to the Boston Redevelopment Authority ndicate that there may be as many as 1,500 (of a total of 2,000) spaces allocated or guests of nearby hotels and the general public. This facility, in addition o the 120 spaces in the office building itself, should meet much of the parking emand produced by the Dewey Square Office Building. Even with this structure, owever, Ellen Collins, a planner with the Boston Redevelopment Authority expects ome increase of illegal on-street parking in the area may still occur. This potenial problem could worsen if development takes place on other parking lots in the rea as is currently being discussed. Consequently, MAPC feels that it would be ppropriate to include in the final environmental impact report an overview of poential parking and traffic impacts should a 90 percent public transit ridership not e attainable.

MAPC thinks the final environmental impact report should address the specifiation of commitments to measures for minimizing environmental impacts. The report identifies actions which could be taken by the developer to minimize environmental damage. The wording of them in the report seems to indicate the decisions had not yet been made regarding whether or not the developer was committed to carrying them out. ⑮

One example involves the discussion of wind. The analysis in the text of the report discusses the planting of "additional trees", trees over and above those in the original design, as a method of reducing wind to more acceptable levels. The "measures to minimize environmental damage", described in the concluding chapter, seem to imply the planting of only those trees in the original design. Another example relates to construction impacts. The wording used in describing the "measures to minimize environmental damage" are stated as those which "can be" taken to reduce noise and dust. The developer's commitment to the stated action should be clarified in the final report. If a commitment to these measures are made, neither the noise nor the dust created during construction would be excessive in the area of the site.

Ms. Eugenie Beal, MAPC representative for the City of Boston, and Mr. Philip Zeigler, MAPC representative for the Boston Redevelopment Authority, were contacted regarding this project. Ms. Beal has expressed concern about parking and traffic flow impacts as well as commitments of the developer to the control of dust during construction. She has also noted that truck routes during construction must be established and approved by the City of Boston prior to their commencement. Mr. Zeigler has also expressed concern about the transportation and construction impacts. In addition, he has commented extensively on the analyses of wind and shadows. The text of comments received from both Ms. Beal and Mr. Zeigler are attached. The Council hopes that their concerns, too, will be addressed in the final environmental impact report.

To reiterate, MAPC concurs with the merits of this project and commends its evelopers on their efforts to identify and minimize potential impacts. The Council opes that the same efforts will be made by the developers in responding to the oncerns expressed herein.

Very truly yours,

Donald E. Megathlin, Jr.
Executive Director

EM/cem
ttachment
c: Donald E. Megathlin, Jr., Executive Director, MAPC
Eugenie Beal, MAPC Representative, Boston
Philip Zeigler, MAPC Representative, Boston Redevleopment Authority
John A. Kessler, Jr., Gaston Snow & Ely Bartlett
Scott McCandless, HMM Associates, Inc.
Norman G. Adams, Jung/Brannen Associates
Robert Costello, MAPC Staff

ENVIRONMENTAL REVIEW REQUEST

DEC 9 1980
Boston
Conservation Commission

Metropolitan Area Planning Council 44 School St Boston MA 02108 Tele 617/523-2454

RECEIVED
DEC 24 1980

DATE: November 28, 1980

I.D. #: EIR-81-2

TO: Eugenie Beal

COMMUNITY: Boston

Enclosed is a description of the project referenced below.

The Council requests that you consider whether this report adequately describes the project's impact upon your community and addresses significant environmental benefits and potential damages.

PROJECT TITLE: Dewey Square Office Building

THE COUNCIL HAS ONLY 15 CALENDAR DAYS TO FILE COMMENTS WITH E.O.E.A. TO MEET THIS DEADLINE, YOUR COMMENTS MUST BE RECEIVED AT THE MAPC BY December 31, 1980

☐ ADEQUATELY DESCRIBES ENVIRONMENTAL IMPACTS

☐ MERITS FURTHER ENVIRONMENTAL STUDY

☐ NEED MORE INFORMATION

EXPLANATORY COMMENTS: We question the need for an additional 120
spaces in this area due to the 2000 car facility that will be available
fact that the building is in an intermodal transportation center. Also,
s much concern about the traffic congestion that is likely to occur in
ea. If it is found that this parking is necessary the applicant must
with the parking freeze procedures and criteria administered by BAPC.
Methods for the control of dust must be established prior to the
ement of excavation activities. Also, truck routes must be established
roved by the City of Boston prior to the commencement of activities.

⑯

SIGNATURE: Eugenie Beal

DATE: 12-24-80

ENVIRONMENTAL REVIEW REQUEST

mapc Metropolitan Area Planning Council 44 School St. Boston MA 02108 Tele. 617/523-2454

RECEI
JAN 2 -

DATE: November 28, 1980

I.D. #: EIR-81-2

TO: Philip Zeigler

COMMUNITY: BRA

Enclosed is a description of the project referenced below.

The Council requests that you consider whether this report adequately describes the project's impact upon your community and addresses significant environmental benefits and potential damages.

PROJECT TITLE: Dewey Square Office Building

THE COUNCIL HAS ONLY 15 CALENDAR DAYS TO FILE COMMENTS WITH E.O.E.A. TO MEET THIS DEADLINE, YOUR COMMENTS MUST BE RECEIVED AT THE MAPC BY December 31, 1980

☐ ADEQUATELY DESCRIBES ENVIRONMENTAL IMPACTS

☐ MERITS FURTHER ENVIRONMENTAL STUDY

☐ NEED MORE INFORMATION

EXPLANATORY COMMENTS:

See attached letter

SIGNATURE: Philip Zeigler

DATE: 12/30/80

Boston
Redevelopment
Authority

Robert J. Ryan, Director

December 29, 1980

Secretary John Bewick
Executive Office of Environmental Affairs
100 Cambridge Street
Boston, MA 02202

ATTENTION: MEPA UNIT

Dear Secretary Bewick:

RE: EOEA #03810: Dewey Square Office Building Draft EIR

Pursuant to regulations implementing M.G.L., Chapter 30, Sections 62-62H, the Boston Redevelopment Authority has reviewed the Draft Environmental Impact Report for the Dewey Square Building and submits the following comments.

In general, we feel that the Impact Report and supporting wind impact study adequately describe the major potential environmental impacts of the proposed office building, although, as noted below, the cumulative impacts on the transportation system require further investigation. This project represents a major effort to develop, in a satisfactory manner, a critical site adjacent to the future South Station Transportation Center. We believe that the office building, developed in close cooperation with the BRA, will provide substantial benefits to this section of the downtown and will do much to improve the image and quality of life of the area. Some specific comments on the report itself follow.

Sec. 6.1 (Wind)

As the Dewey Square wind study indicates, the project will, in most instances, increase local pedestrian level winds in the immediate vicinity of the project. The major problem areas appear to be along both sides of Atlantic Avenue and on Essex Street, where, in some cases, speeds are predicted to double in intensity (although not necessarily due solely to the project but rather to a strong interaction with the future air-rights towers proposed for South Station). At most of the receptors here (as well as at the corner of Summer and Purchase Streets, along the major pedestrian route to the downtown) effective gusts are predicted to approach closely the acceptability level of 34 mph (in some instances, they actually exceed the Copley Place threshold of 30.5 mph). Since future circulation plans for the downtown consider Essex Street as a major pedestrian access to Lafayette Place and adjacent areas, it is recommended that there be further investigation of mitigation measures for this locality. ⑰

1 City Hall Square
Boston, Massachusetts 02201

In addition, the study has indicated that the planting of trees often can significantly reduce the wind impacts, while in some cases it may actually exacerbate the problem. Additional study of tree arrangements should be undertaken in order to produce as positive an effect as possible. Also, consideration of the use of trees that will be effective in winter, when winds generally are higher (20% higher than on an annual basis (pg. 11 of the wind impact study)) and more adverse, is encouraged. If deciduous plantings are used, the winter impacts then could be similar to the case without trees.

⑱ Table 6.1-2 (and Fig. 6.1-5) - It would appear that the effective gust velocity for Receptor 7, with trees, is incorrect, since it is less than that without trees whereas the mean velocity is higher.

⑲ Fig. 6.1-7 - The line for Receptor 26 is missing from the middle graph. Also, the meaning of the shaded portion of these graphs should be indicated.

⑳ Figs. 6.1-5 & 6.1-6 - It would be helpful if the receptor numbers also could be included in the figures, perhaps within the circles, to eliminate the necessity of referring back to Fig. 6.1-4; also the north arrow should be included.

Sec. 6.2 (Shadows)

㉑ The EIR states that no public open areas will be affected by winter shadows. However, although not indicated on the figures, by extrapolation it can be noted that sections of the Boston Common will, in fact, be affected during the early morning hours (before 9:00). In addition, the Federal Reserve Building open spaces will be significantly impacted during those periods of the year when the sun would be most welcome.

Sec. 6.3 (Transportation)

㉒ p. 6-44 - Although currently the existing parking supply in the area is limited, it should be noted that South Station development plans call for a 500 car garage in Phase I and an additional 1,500 spaces in Phase II. The majority of these spaces will be commercial spaces. What effect might this parking, very convenient to the project, have on the modal split assumptions?

㉓ Table 6.3-5 - Although the overall auto modal split is assumed to be 10%, it is not necessarily true that it will be 10% for each access corridor. The percentages for each corridor may differ, but average out to 10%. Should not the table reflect this, based on the Wilbur Smith data?

㉔ Sec. 6.3.5 - The impact analysis on the transit system is not necessarily accurate since it merely adds on the anticipated project-generated trips to "current" (1978) trips. The analysis does not include normal growth in ridership for the future (if that is appropriate) nor the additional ridership anticipated from other major development projects in the downtown, which also are expected to add considerable numbers to the ridership. These cumulative impacts are necessary in order to obtain a realistic picture of the effect on the transit system.

Sec. 6.4.1 (Noise)

㉕ pp. 6-67 - 6-68 - Why is 200 feet used as the distance to measure construction noise impact for scenario 1 and 250 feet for scenario 2? Both should be the same so as to be comparable. Using 200 feet, scenario 2 will increase local noise levels by 5dBA, which will begin to be noticeable.

㉖ Fig. 6.4-3 - Does this represent scenario 1 or 2?

㉗ Sec. 6.4.1 - No mention is made of pile driving. Will pile driving be necessary? If so, what will be the noise impact and has this been factored into scenario 1?

Sec. 6.6.2 (Visibility)

㉘ It should also be noted that the project will block views of the downtown/financial district from the adjacent Hotel Essex.

㉙ Sec. 7.1 - The redevelopment plans for South Station itself, including proposals for air-rights hotel/office/industrial development, should be noted here, as well as their relationship to the Dewey Square project.

㉚ Sec. 8.2 (Shadow mitigation) - It is incorrect to say that the location of the office tower on the southern portion of the site minimizes the shadow impact on South Station. In fact, an examination of the shadow diagrams will show that moving the tower south actually increases the impact on South Station. For most other and more distant buildings, the location of the tower on the parcel makes relatively little difference.

㉛ Sec. 8.4 (Construction Impacts) - Limiting the hours of outdoor operations will not reduce construction noise levels - these remain the same regardless of the hour. However, it can reduce the impact. In addition, since construction supposedly is to be limited to between 7 a.m. and 4 p.m. (see Sec. 3.4, p.3-27), how is extending this period to 10 p.m. (p.8-2) a mitigation measure?

We trust that these comments will be addressed adequately in the Final EIR.

Sincerely,

Robert J. Ryan
Director

/526/394/7869

cc: John A. Kessler, Jr.
Gaston, Snow & Ely Bartlett

Scott McCandless
HMM Associates, Inc.

3. RESPONSES TO COMMENTS ON THE DRAFT EIR

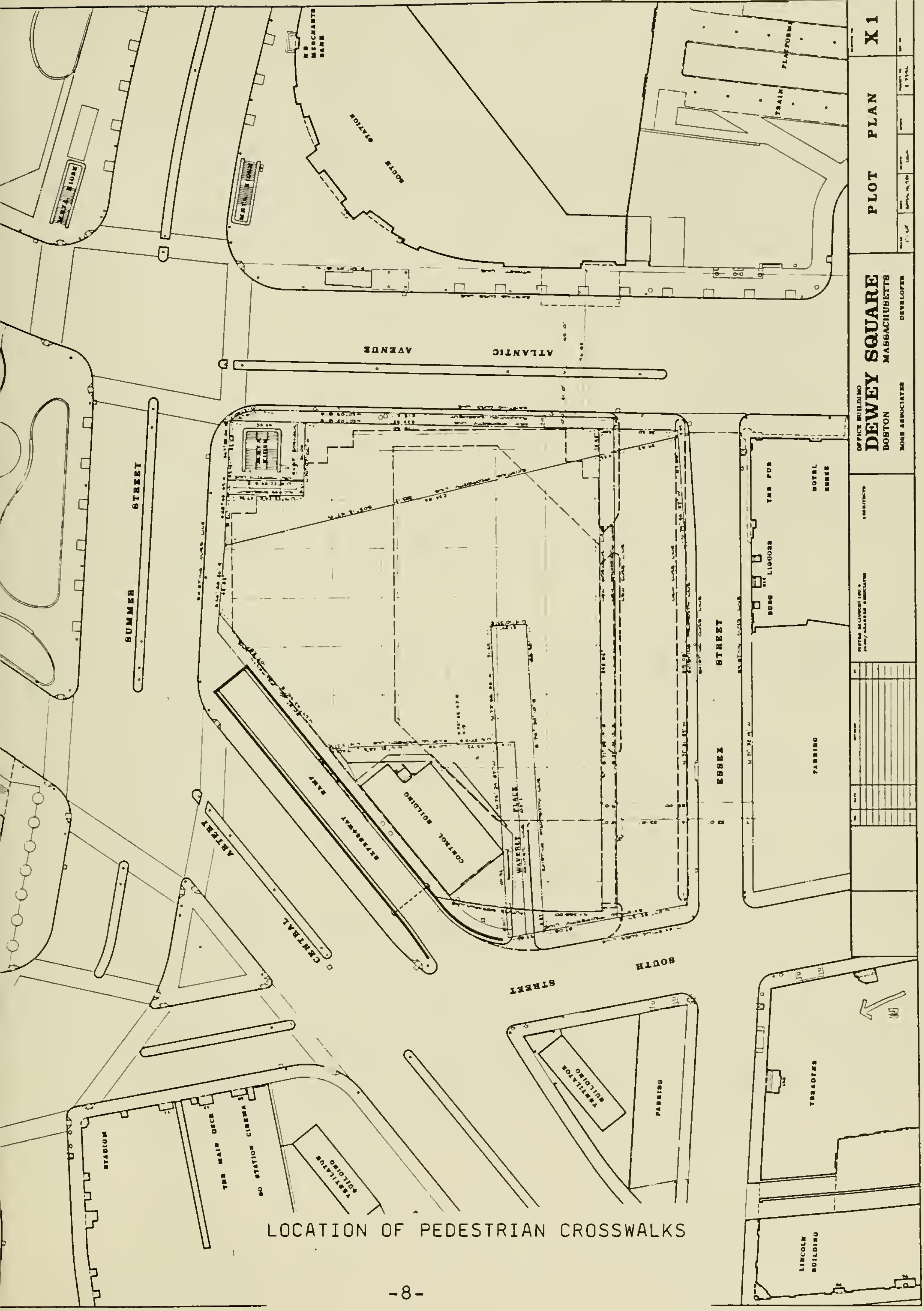
1. Section #4 includes a supplementary wind analysis. This analysis includes results of additional wind tunnel modeling and discussion of means for mitigating potential wind impacts.

2. The proponent believes that 90% transit ridership for the Dewey Square tenants is an achievable goal. Given the limited parking in the building, auto-related impacts associated with the project are not significant. Building tenants may drive and park at the proposed South Station garage. Impacts associated with this garage are studied in the South Station EIR.

3. The widening of Essex Street is related to other projects, including the development of a Transportation Center at South Station, the related one-way pairing of Atlantic Avenue and South Street from Essex Street to the Mass. Pike, and to the Lafayette Place project located at the junction of Essex and Washington Streets. Essex Street is planned as a major route to and from Lafayette Place, and from South Station to the entrance to the Mass. Pike, and therefore, will be handling large volumes of traffic. The widening of Essex Street in the area adjacent to the project is unrelated to the project itself.

4. The attached figure shows the location of the pedestrian crosswalk around the proposed building.

5. Although existing subway transit system operations are scheduled for specific peak and off-peak headways (refer to p. 6-52 in the Draft EIR), actual train arrivals fluctuate due to the various operational characteristics (i.e., variations in train loading times, system delays, etc.) of the system. Accordingly, the passenger volume and system capacity analysis, presented in the Draft EIR, focused on relative impacts during the peak hour period.



LOCATION OF PEDESTRIAN CROSSWALKS

As described in the Draft EIR (p. 6-53):

> "...(passenger) volumes during the peak 15 minutes of the peak hour may be as high as 35 percent of the total peak hour period. If this were the case, 15 minute peak volume-to-capacity rates corresponding to those in Table 6.3-9 would range from 45% to 110% of capacity for existing conditions, and from 45% to 120% of capacity for future conditions with the proposed project."

Existing transit line congestion realized along most transit lines during the peak periods can be explained by the fact that fluctuating peak hour vehicle headways, random passenger arrivals, and occasional variance in the number of cars per train, create capacity deficiencies during small time intervals. As presented in the Draft EIR (p. 6-55):

> "During some given short-term sub-intervals within the peak hour, several (subway) lines operate over-capacity for both existing and future conditions."

The implementation of a staggered work hour program for the proposed development would mitigate potential impacts associated with peak period transit loadings. However, such a program would be most efficient if it were included as part of a more comprehensive city-wide program, since it appears that the project-generated transit person trips will not have a significant relative impact on the existing system.

6. In order to assess potential subway system related impacts, total directional peak hour passenger volumes (i.e., existing plus project-generated directional passenger volumes) for the worst case, either a.m. peak hour (inbound) or p.m. peak hour

(outbound) were analyzed. Since the scheduled vehicle headways and fleet availability are identical for the a.m. peak hour inbound and p.m. peak hour outbound conditions, the analysis focused only on the critical (i.e., worst case) volume-to-capacity relationships for each of the system sections identified in Table 6.3-9. Generally, the worst case condition occurred during the p.m. peak hour period.

7. The proponent agrees that an increase of 4 dBA is not an imperceptible change. The sentence in question should be changed to read "a moderate change in noise level."

8. The proponent agrees that noise impacts at the Essex Hotel should be minimized. Please refer to the response to Comment #15 for a description of commitments made by the developer to mitigate noise impacts.

9. Please refer to the response to Comment #15 for a description of commitments made by the developer to mitigate construction related dust impacts.

10. The attached letter from the project engineer addresses the two concerns outlined in this comment. The exterior of the building will be permanently sealed; fresh air for ventilation will be provided through the HVAC system.

    The heating zones of the building are in a northeast and southwest heating control mode, with solar compensation incorporated into the system. This design is intended to minimize overheating effects caused by the sun.

Cosentini Associates

CONSULTING ENGINEERS

SPM Engineering Associates

Electrical Engineering Consultants to Cosentini Associates

Two Pennsylvania Plaza, New York, N.Y. 10001

Telephone (212) 564-7200

Telex-WUI-666447

J. L. Amato
R. N. Amato
D. P. Byrne
C. K. Chan
J. De La Pena
J. T. Dwyer
R. E. Emmert
W. Lawrence
M. Lewin
K. E. Marston
M. J. Morrongiello
E. F. Mulvihill
L. Reider
R. A. Taylor

Controller
N. Kavares

February 10, 1981

Jung/Brannen Associates, Inc.
177 Milk Street
Boston, Mass. 02109

Attention: Mr. Richard Cary

Re: Dewey Square Office Building
Our Job No. 2577

Dear Richard:

In reference to your letter of February 4 concerning the comments from the Secretary of Environmental Affairs on your draft Environmental Impact Report we wish to comment as follows: The exterior of the building will be permanently sealed (non operable windows I assume). Ventilation air is being provided through the HVAC system.

We have zoned the heating of the building into a northeast and southwest heating control mode and have incorporated solarcompensation, thus greatly minimizing the overheating effect you discussed for the other highrise buildings. We hope the above meets with your approval.

Very truly yours,

COSENTINI ASSOCIATES

David Michaeli

5-7346

x

RECEIVED
J/B
J/B R
FEB 1 1981

11. Section #4 includes supplementary wind analysis. This analysis includes the results of additional wind tunnel modeling and discussion of means for mitigating potential wind impacts. This work was undertaken to respond to comments on the potential for pedestrian level wind effects and to the study design refinements undertaken since the filing of the Draft EIR. Please note, however, that the detailed wind tunnel studies included in the Draft EIR were summarized as follows:

> "The overall pedestrian level wind climate, although windier after development, is consistent with the wind climate near other tall buildings and is within accepted levels of pedestrian comfort for the activities expected".[1]

12. The building foundation for the proposed project is designed such that structural loads will not influence the existing MBTA Red Line tunnel. Although construction conflicts between proposed development and MBTA subway construction are not anticipated, coordination of proponent and MBTA final construction plans would eliminate any potential construction conflicts.

---

[1] Draft EIR, p.2.2.

13. The proponent feels that this comment represents a misunderstanding between the commenting agency and DPW. The development team has undertaken extensive consultations with DPW and feels there is full and complete understanding of the relationship between the Central Artery and Dewey Square Office Building project teams. The DPW was represented by Mr. Jack Gardner at the scoping session for the Dewey Square Office Building EIR. During that session Mr. Gardner reviewed the alternatives for the Central Artery project, citing potential conflicts. In response the developer volunteered to modify the designs to the building to accommodate only one of many Central Artery configurations under study which might have resulted in a conflict if that alternative were ultimately selected.

The project proponent continues to deal with DPW on a regular basis and continues to find the relationship constructive and cooperative.

14. Due to several factors, including the location of the proposed project in relation to available mass transportation facilities and existing parking supply and demand characteristics of the general area, project-generated vehicle traffic is not anticipated to have a significant impact upon the area-wide roadway system. The model split assumption of 10% auto and 90% transit is considered realistic for the proposed project. In light of this, the potential transportation impact identified in the Draft EIR are considered maximum, yet realistic, for the most likely future condition.

It should also be noted that the scope of studies for the EIR contained no requirement for traffic studies. During the scoping session it was pointed out that local traffic impacts could be more appropriately handled in the South Station EIS. The South Station project plans a garage with 1,700 spaces, the Dewey Square Office Building reduces on-site parking supply.

15. The proponent has considered mitigating measures for several of the potential impacts outlined in the Draft EIR. Commitments to measures for minimizing wind impacts would be premature. However, candidate measures for mitigating wind are outlined in Section #4 of this report. Commitments to minimizing the short-term impacts associated with construction activities are as follows:

    a) Heavy construction (construction using heavy equipment) will take place only during the hours between 7:00 A.M. and 4:00 P.M. Defining maximum allowable construction hours will ensure some limits to the construction noise impacts on the Essex Hotel.

    b) Construction contracts will include specifications committing the contractors to quiet practices. These commitments will include use of equipment in good repair with operable mufflers. Contracts will preclude the use of equipment or practices which result in individual noise levels of more than 90 dB at 50 feet without prior approval by the developer. The developer will provide such approval only when, in his judgment, no feasible alternative equipment can be used.

c) Construction contracts will require the contractor to employ noise management practices. These will include instructions to operate construction equipment as quietly as practical, using low RPM and minimum idling time. The contractor will be advised to locate and orient fixed equipment such as compressors and generators in a manner which will minimize impacts to the Essex Hotel, other nearby buildings and pedestrians.

d) The contractor will be required to cover loose spoils, debris, aggregate storage piles and truck beds. During the earthwork phases of the project, the contractor will be required to water loose soils once per day if the potential for substantial fugitive dust emissions exists.

e) The developer will provide an inspection once per week during the first six months of construction to ensure that the construction control language in the contracts is enforced.

16. The proponent feels that this comment reflects a misunderstanding of the project. Development of the building removes an existing surface parking lot with 188 spaces and replaces it with a subsurface parking garage with 120 spaces. The net result is a reduction of 68 spaces. The proponent feels that the 120 parking spaces must be retained as a prerequisite to marketing the space to potential tenants of the building. The 120 spaces provide a little more than two spaces per floor of the building.

In the transportation section of the Draft EIR the consultants to the proponent estimated that the building will generate 8,416 average daily arrivals. With 120 spaces which will be reserved for the tenants of the building, less than 1 1/2% of the arrivals will be accommodated by the on-site parking. This level of supply will clearly serve as an inducement for employees and visitors to the building to use the available public transportation facilities at South Station.

It should also be noted that the total of 120 spaces is far fewer than provided for in other recent developments in Boston. Copley Place, for example, is to provide 1,432 parking spaces and Devonshire Tower, which has roughly half the floor area of the Dewey Square Office Building, will provide 150 spaces for its tenants.

17. Additional wind tunnel modeling has been undertaken. The supplementary analysis has been undertaken to respond to comments expressing concern over the increased wind speeds associated with development of the building. Refinements to project design have been examined and mitigating measures have been studied. Results of this new work are discussed in section #4 of this report.

18. The reported values for receptor #7, with the development, but without the trees, are incorrect. The correct values should read "5.4(8.2)".

19. The wind tunnel modelling has been totally revised. These data are no longer relevant. The complete new wind tunnel modelling study has been provided to BRA. A summary of the new work is included in Section #4 of this report.

Figure 6.1-7 from the Draft EIR was a summary of the mean wind speeds exceeded during events with different average rates of occurrence for all receptor locations tested. The shaded area is the range of these wind speeds.

20. For the new figures contained in Section #4, the receptor numbers are included.

21. It is true that the proposed building will shade a very limited portion of the Boston Common before 9:00 A.M. on winter mornings. Most of the portion of the Common which could be reached by the Dewey Square Tower shadow is already shaded at this hour by existing buildings. The small additional shading was not discussed as an impact because the proponent does not feel that this will affect the Common's function as a public open area. During the hours when shadows occur recreational and passive uses of the Common are unlikely. Rather, it is used by pedestrians enroute to the downtown area or the Park Street MBTA Station.

The proponent agrees that the Dewey Square Office Building will cast a shadow on the Federal Reserve Building Plaza in the late afternoon throughout the year. At approximately 4:00 P.M. the shadow will sweep across the Plaza to the entrance to the building. The proponent does not consider this a significant impact, however. The shadow occurs only late in the day, as opposed to during mid-day periods which are more sensitive. (Note that the Federal Reserve Tower itself and the South Station towers will shadow the Plaza during the noon hour and early afternoon when passive use by pedestrians is much more likely.) Likewise, the proponent feels that little impact will be perceived by pedestrians due to the nature of the Plaza. Pedestrians use the Plaza mainly for access to the building. During this type of short-term active use shadows should not present a significant impact.

22. The modal split assumption of 90% public transit/10% automobile was scoped by the EOEA with knowledge of the plans for South Station. Therefore, the 90%/10% modal split takes this new source of parking into consideration. However, if the modal split were to change in favor of increased auto use and decreased transit ridership the transit analysis presented in the Draft EIR will have overestimated transit impacts. The effect of more auto use by Dewey Square tenants should not change the traffic analysis in the South Station EIR because the analysis is based on the total number of autos, and not the ultimate destination of their occupants.

23. Use of the Wilbur Smith and Associates data for distributing project-generated person trips to the various access corridors was appropriate for developing person trip assignments (vehicle and mass transit) to and from the project site. The assumed modal split of 10% auto and 90% transit was applied equally to each access corridor, since both highway and transit facilities are avilable along each corridor. Further disaggregation of the Wilbur Smith and Associates data, to account for possible modal usage variance between the various corridors would not provide results significantly different from those presented in the Draft EIR.

24. The primary purpose of the transit anaylsis presented in the Draft EIR, was to assess potential impacts associated with project-generated transit person-trips. An approach was taken whereby the relative impacts associated with these additional transit trips could be identified and evaluated. Due to uncertainties associated with various future base condition transit operations, the existing base-condition was used for comparative purposes.

As noted in the Draft EIR, several major subway transit improvements, including the Southwest Corridor Improvement Project/Orange Line Relocation and the Red Line extension to Alewife, are expected to increase system-wide transit usage as well as improve general operations. On-going MBTA rail transit station improvements are also being implemented with platform extentions capable of servicing 6-car trains. Impacts of these future improvements, as well as future transit patronage increases from non-project related development, were not considered, however, so that relative subway transit impacts associated with the proposed project could be more readily assessed.

25. The two construction noise scenarios were modeled for distances in increments of 50 feet from the site. In the first scenario, a noise increase of 4 dBA over the background noise level occurred 200 feet from the site. In the second scenario, this level of impact, i.e. a 4 dBA increase over background, occurred 250 feet from the site because on-site construction activity is louder. The two different distances represent a comparison based on the noise level experienced at that distance. However, for comparison of noise levels at 200 feet, page 6-68, paragraph 2, states, in reference to scenario 2, that "The predicted construction related noise level 200 feet from the theoretical site center is 79 dBA". This is 2 dBA higher than the predicted noise level 250 feet from the theoretical site center.

26. Figure 6.4-3 represents construction noise scenario #2.

27. The building will have a mat foundation. No foundation piles will be used. However, soldier piles, only, will be driven or drilled where necessary along the exterior perimeter of the excavation site.

28. It is unfortunate that the more pleasing distant view of some attractive buildings is lost with the construction of the proposed project. The proponent feels, however, that the overall aesthetic impact for the Essex Hotel will be very positive. The Dewey Square Office Building replaces an unattractive, vacant development parcel with an attractive, active use. As shown in the attached photographs, much of the view currently available from the hotel creates a negative impression. Furthermore, substantial effort has been made by the project proponent to site the development such that views of the South Station Headhouse are preserved.

29. The two attached figures illustrate the redevelopment plans for South Station, including air rights proposals. The project includes:

- a mid-rise office tower;
- a 24-story, 600-room hotel;
- a major low-rise development parcel;
- a 1,700 space public parking garage;
- office and retail renovation opportunity;
- a regional and inter-city bus terminal;
- an Amtrak and commuter rail terminal; and
- a renovated subway mezzanine area.

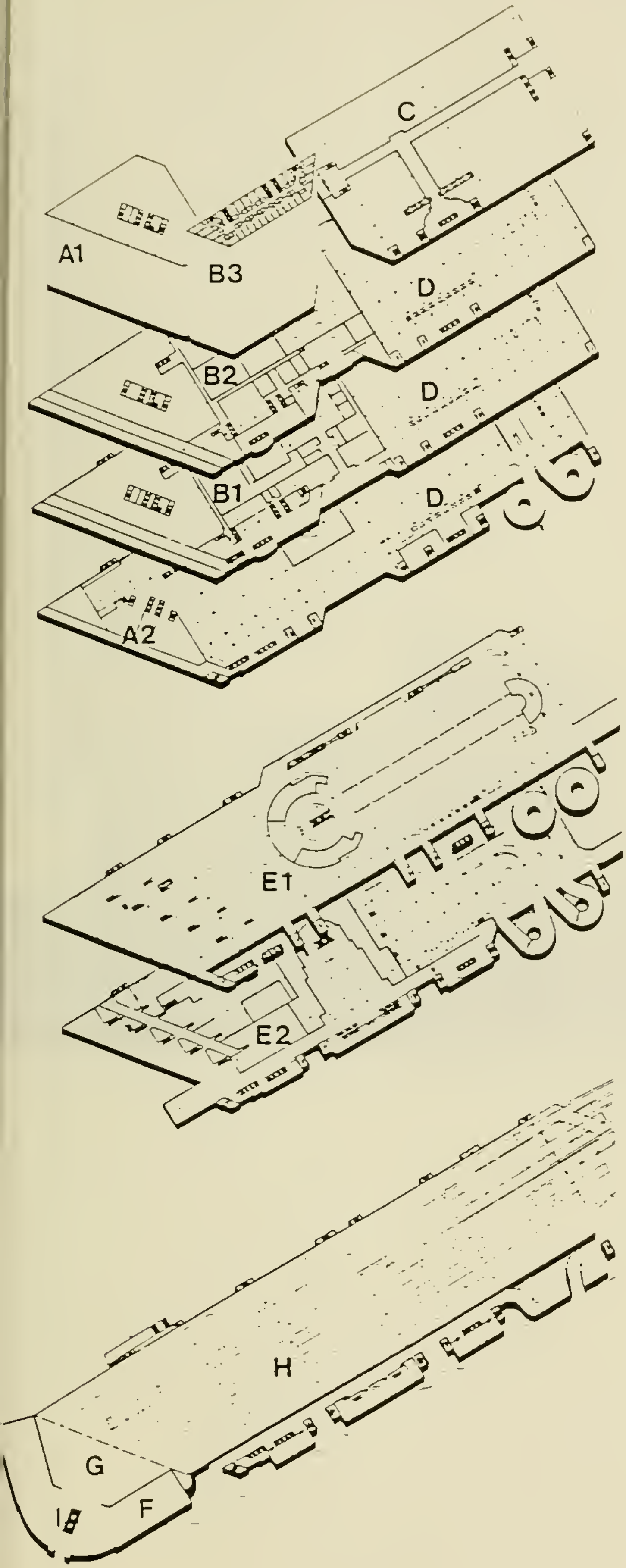
This large-scale, multi-use development will encourage round-the-clock activity which will interact with the theatres included in the Dewey Square Office Building. In

TEL ESSEX

EX

X
HOTEL
ESSEX
PUB

HOTEL ESSEX



XPLODED VIEW OF THE COMPLEX

AIR RIGHTS DEVELOPMENT

OFFICE BUILDING
A1 400 000 SQUARE FOOT TOWER
A2 LOBBY

CONVENTION HOTEL
B1 LOBBY CONVENTION FACILITIES, RESTAURANT AND CAFE
B2 HOTEL SERVICE SPACES HEALTH CLUB
B3 600 GUEST ROOM TOWER

LOW RISE DEVELOPMENT
C TOTAL OF 250 000 SQUARE FOOT ON A 125.000 SQUARE FOOT SITE

PARKING
D 1700 CAR CAPACITY ON 3 LEVELS

BUS TERMINAL

E1 INTERCITY AND COMMUTER BUS TERMINALS
E2 PEDESTRIAN CONCOURSE AND CAR PARKING

TRAIN STATION

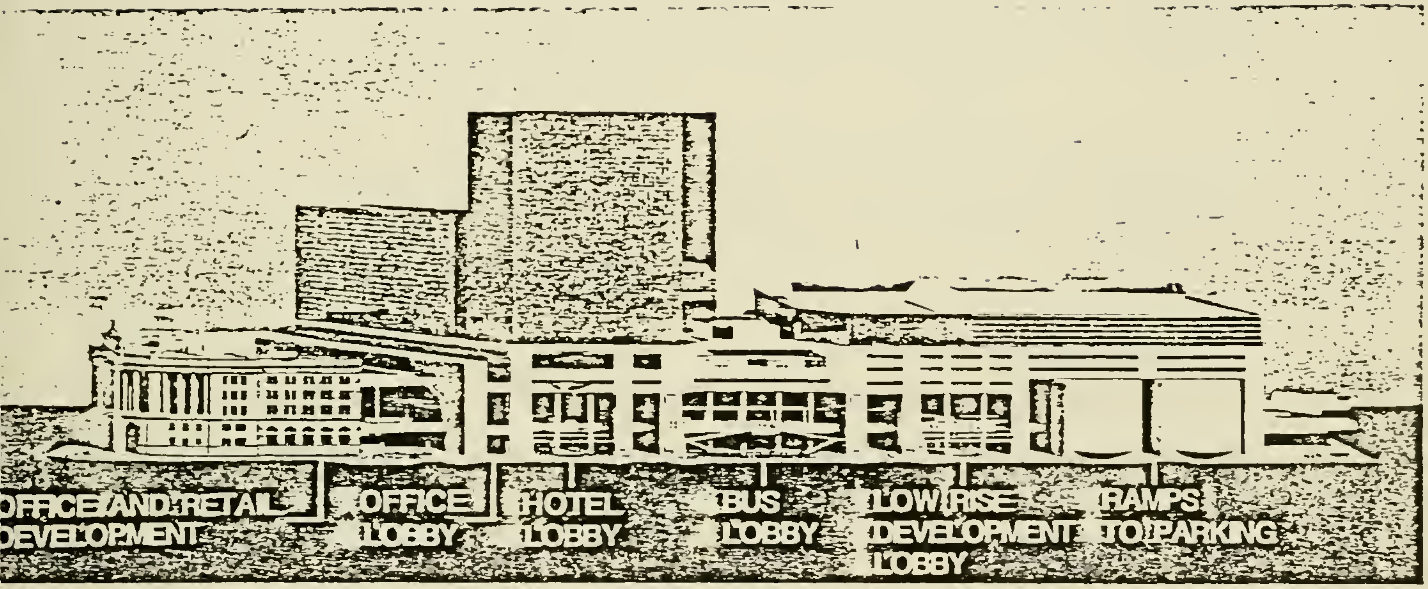
F RENOVATED HISTORIC SOUTH STATION HEAD-HOUSE WITH RECONSTRUCTED WEST WING 100 000 SQUARE FEET OFFICE & RETAIL

G MAIN CONCOURSE SPACE

H TRAIN BOARDING PLATFORMS

SUBWAY STATION RENOVATION

I ESCALATOR TO SUBWAY STATION


OFFICE AND RETAIL DEVELOPMENT
OFFICE LOBBY
HOTEL LOBBY
BUS LOBBY
LOW RISE DEVELOPMENT LOBBY
RAMPS TO PARKING

addition, transit improvements and public parking spaces will make Dewey Square even more easily accessible than it is now. The public and private investment in the South Station project will complement the Dewey Square Office Building investment and help encourage up-grading of this area of Boston.

30. The proponent agrees with this comment. The placement of the tower on the southern portion of the site does increase shadow impact. The placement is constructive from another standpoint. The setback of the tower preserves views of the South Station headhouse from the north. This provides a better visual setting for that landmark.

31. The proponent agrees that noise impacts, rather than noise levels, will be reduced by limiting the hours of outdoor construction activity.

Construction activities will be limited to the hours between 7:00 A.M. and 4:00 P.M. as mentioned on page 3-27 of the Draft EIR. The statement on page 8-2 is incorrect and should not be included as mitigation measure.

4.1 MODIFICATIONS TO THE DESIGN OF THE BUILDING

4.1 Modifications to the Design of the Building

Since the filing of the Draft EIR the project architects have worked closely with the staff of the BRA to review and modify the design of the Dewey Square Office Building. The following sections describe the current design concept.

4.1.1 Dimensions

Figures 4.1-1 and 4.1-2 are sections of the new building design. The Dewey Square Office Building will be 46 stories above ground level. This is one more story than reported in the Draft EIR. From Summer Street the office tower will rise 592 feet to the parapet. The foundation of the building will drop 28 feet below Summer Street.

The lowest level of the building will include a gross area of 58,299 square feet. This is the largest level in the building. The ground level includes a gross area of 32,018 square feet. This level covers most of the site. Out of concern for the visual corridor to the South Station Headhouse facade, the building has been drawn back from Summer Street.

The office tower will be six sided. It will be 125 feet wide (north/south axis) and 230 feet long (east/west axis).

4.1.2 Parking and Mechanical Levels

Lower levels one and two are shown on Figure 4.1-3. These levels contain the parking area and most of the mechanical areas for the Dewey Square Office Building. Lower Level Two, at Elevation 4, contains 37,397 square feet of usable area, most of which is garage space, and 20,902 square feet of mechanical space. This level also includes thermal storage tanks located below Essex Street. Lower Level One, at Elevation 10, contains the remainder of the parking space, 22,747 square feet, 12,364 square feet of theatre space and some more mechanical space

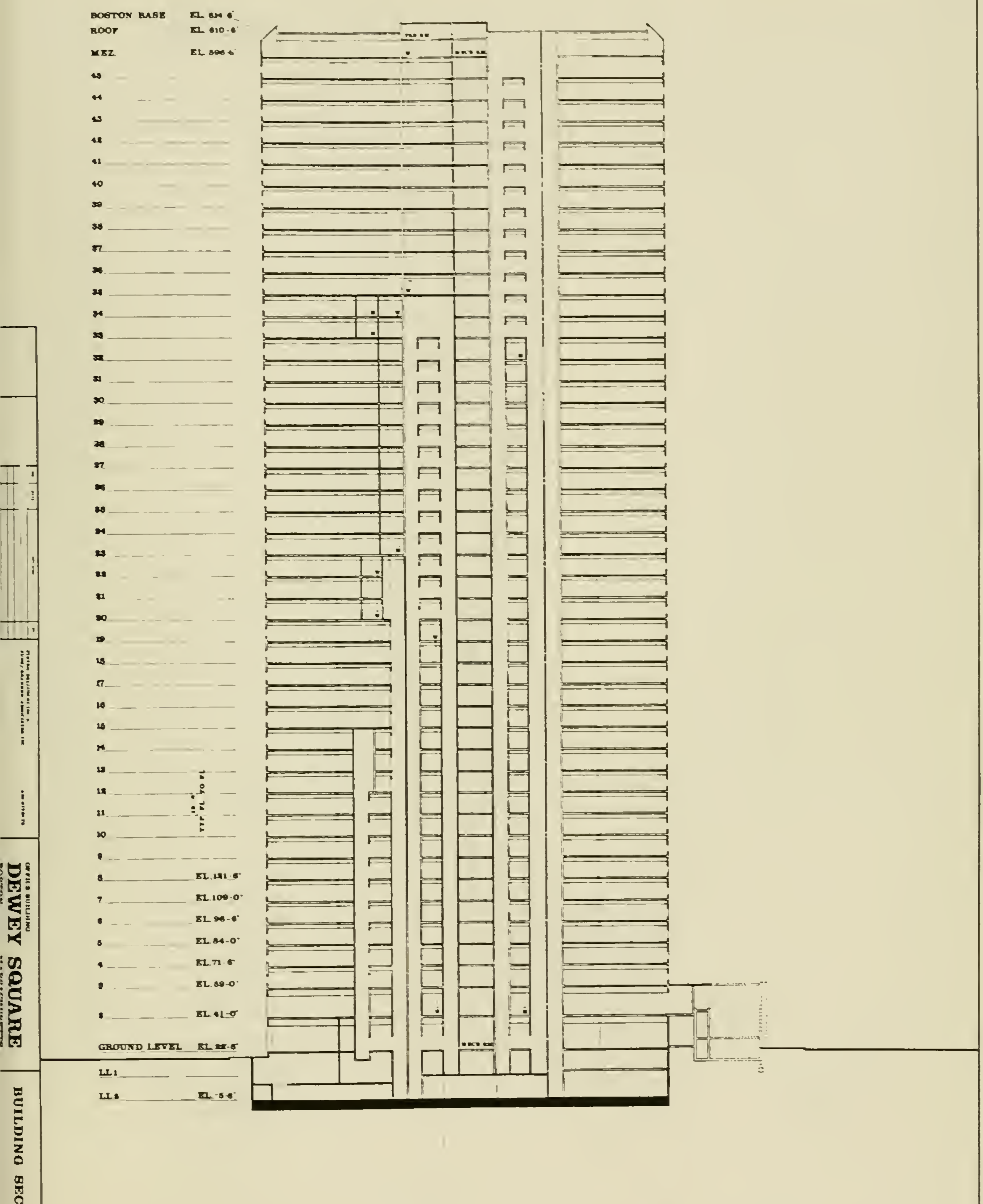

BOSTON BASE EL. 634-6'
ROOF EL. 610-6'
MEZ. EL. 596-6'
8 EL. 121-6"
7 EL. 109-0"
6 EL. 96-6"
5 EL. 84-0"
4 EL. 71-6"
3 EL. 59-0"
2 EL. 41-0"
GROUND LEVEL EL. 22-6"
LL1
LL2 EL. -5-6"
12'-6" TYP. FL TO FL
OFFICE BUILDING
DEWEY SQUARE
BUILDING SECTION-B
A 211

FIGURE 4.1-1

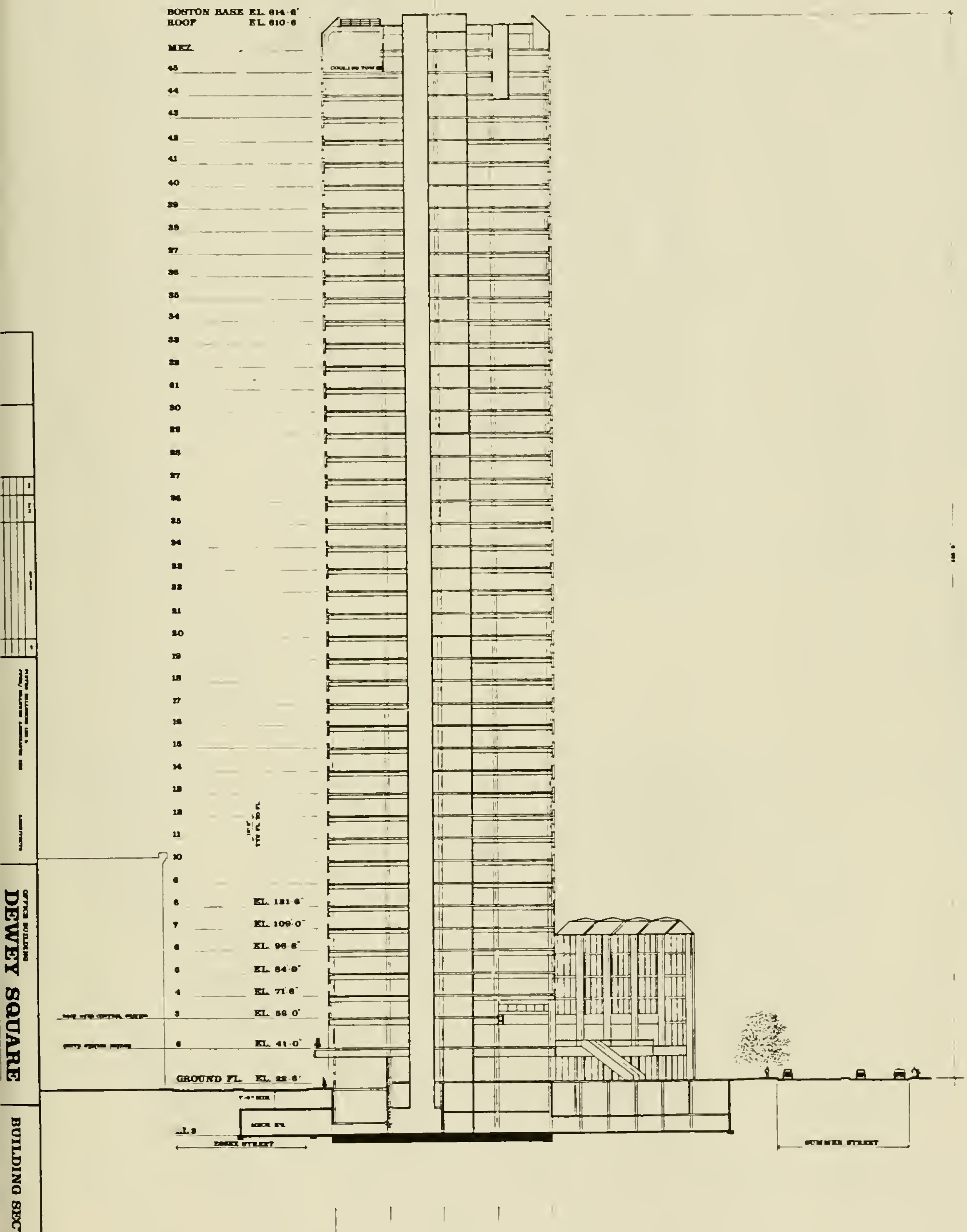

BOSTON BASE EL. 614-6'
ROOF EL. 610-6
MEZ.
GROUND FL. EL. 22-6'
EL. 131-6'
EL. 109-0"
EL. 96-6"
EL. 84-9"
EL. 71-6"
EL. 59-0'
EL. 41-0'
ESSEX STREET
SUMMER STREET
OFFICE BUILDING
DEWEY SQUARE
BUILDING SECTION A
A 212

FIGURE 4.1-2

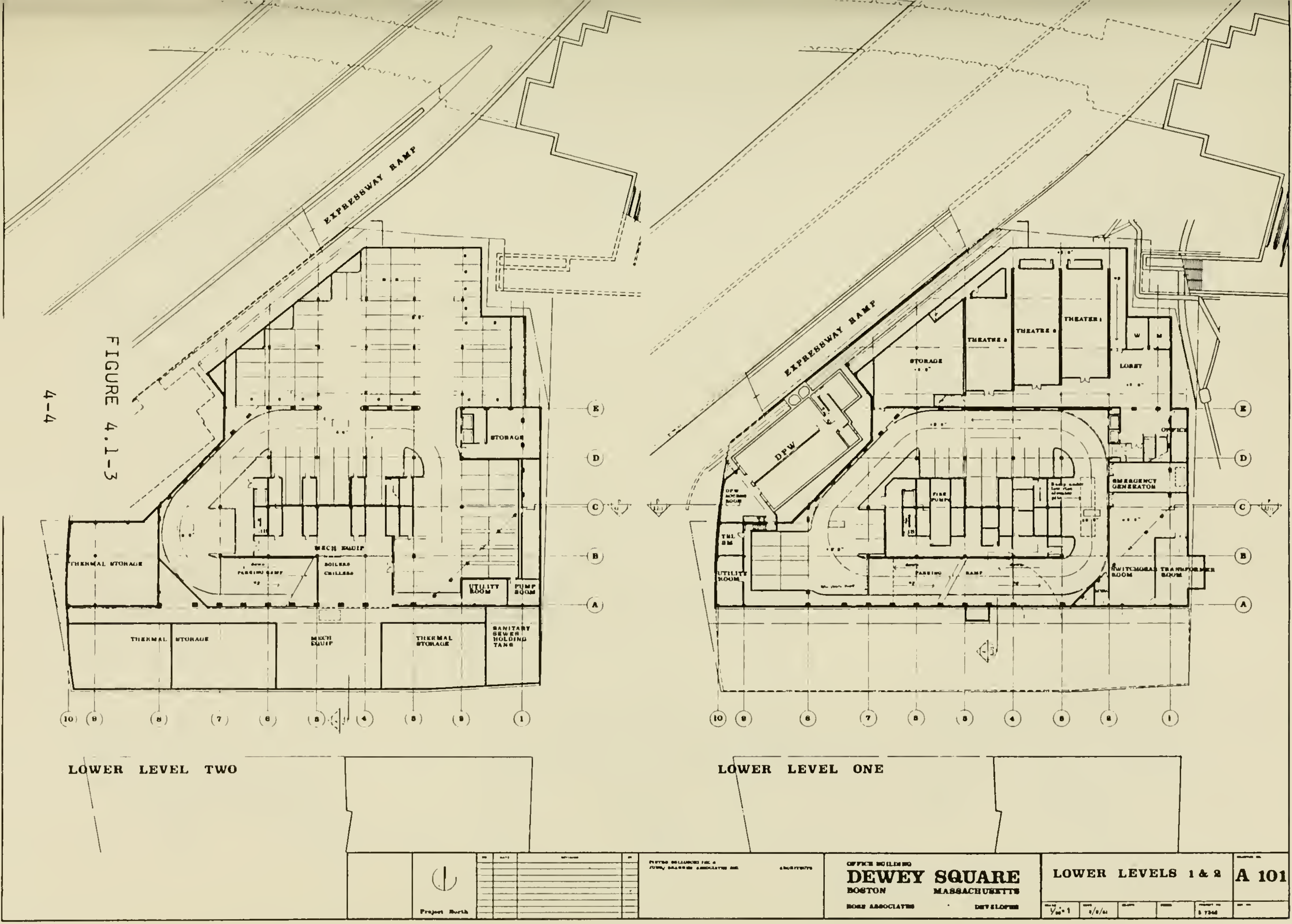

EXPRESSWAY RAMP
THERMAL STORAGE
MECH EQUIP
PARKING RAMP
BOILERS
CHILLERS
STORAGE
UTILITY ROOM
PUMP ROOM
THERMAL STORAGE
MECH EQUIP
THERMAL STORAGE
SANITARY SEWER HOLDING TANK
LOWER LEVEL TWO
EXPRESSWAY RAMP
DPW
DPW ROOM
TEL RM
UTILITY ROOM
STORAGE
THEATRE 3
THEATRE 2
THEATER 1
W
M
LOBBY
OFFICE
FIRE PUMP
EMERGENCY GENERATOR
PARKING
RAMP
SWITCHGEAR ROOM
TRANSFORMER ROOM
LOWER LEVEL ONE
A
B
C
D
E
1
2
3
4
5
6
7
8
9
10
Project North
ARCHITECTS
OFFICE BUILDING
DEWEY SQUARE
BOSTON
MASSACHUSETTS
DEVELOPER
LOWER LEVELS 1 & 2
A 101

FIGURE 4.1-3

including the emergency generator and telephone room. Also located on this level are the sanitary sewer holding tanks required by the Boston Sewer Commission. Additional mechanical space related to the HVAC and elevator systems will be located on each floor of the building. Access ramps for the garage, as well as loading bays for trucks are located off Essex Street on the ground floor, as shown in Figure 4.1-4. The DPW mechanical control building, currently located on the site, will be covered by the project and contained within the first two above-grade levels.

4.1.3 Public Spaces

The public area in the Dewey Square Office Building includes retail, restaurant, movie theater and lobby space. These areas are contained on the first two levels above grade, and one level below grade. The movie theaters are located below grade, as shown in Figure 4.1-3. The theater entrance is on the ground floor. Also located on the ground floor is 7,937 square feet of retail space, along with the gallery entrance and the office elevator lobby (see Figure 4.1-4). On the second floor, shown in Figure 4.1-5, an additional 31,006 square feet of retail space is located. This space consists of both restaurant/cocktail lounge and shop space. The remaining portion of this floor is open to the floor below.

4.1.4 Office Space

The office levels begin on the third floor. Figure 4.1-6 shows the first four office floors. On the first office floor (third floor), part of the floor is open to the floors below. On the seventh floor, the office tower assumes the six-sided configuration which continues up to the top of the building. Each of these office floors contain 24,972 gross square feet of space. Figures 4.1-7 and 4.1-8 show the upper office levels. The 45th floor is the last complete office floor. The 46th floor is a partial floor with mezzanine, sloped roof and skylights.

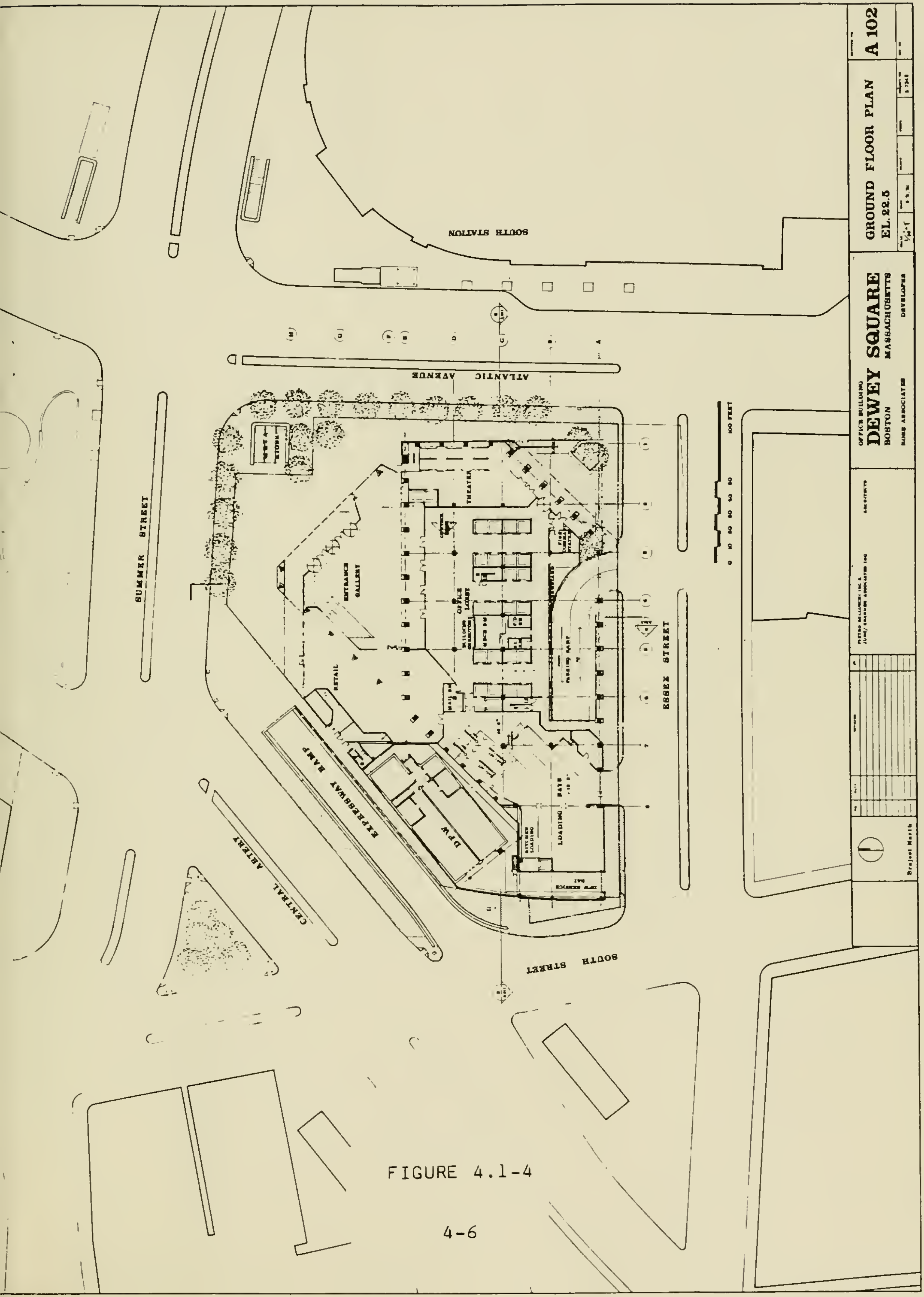

GROUND FLOOR PLAN
EL. 22.5
A 102
OFFICE BUILDING
DEWEY SQUARE
BOSTON
MASSACHUSETTS
DEVELOPER
ARCHITECTS
Project North
SOUTH STATION
ATLANTIC AVENUE
SUMMER STREET
ESSEX STREET
SOUTH STREET
CENTRAL ARTERY
EXPRESSWAY RAMP
DPW
ENTRANCE GALLERY
OFFICE LOBBY
THEATER
RETAIL
LOADING
KITCHEN LOADING
100 FEET

FIGURE 4.1-4

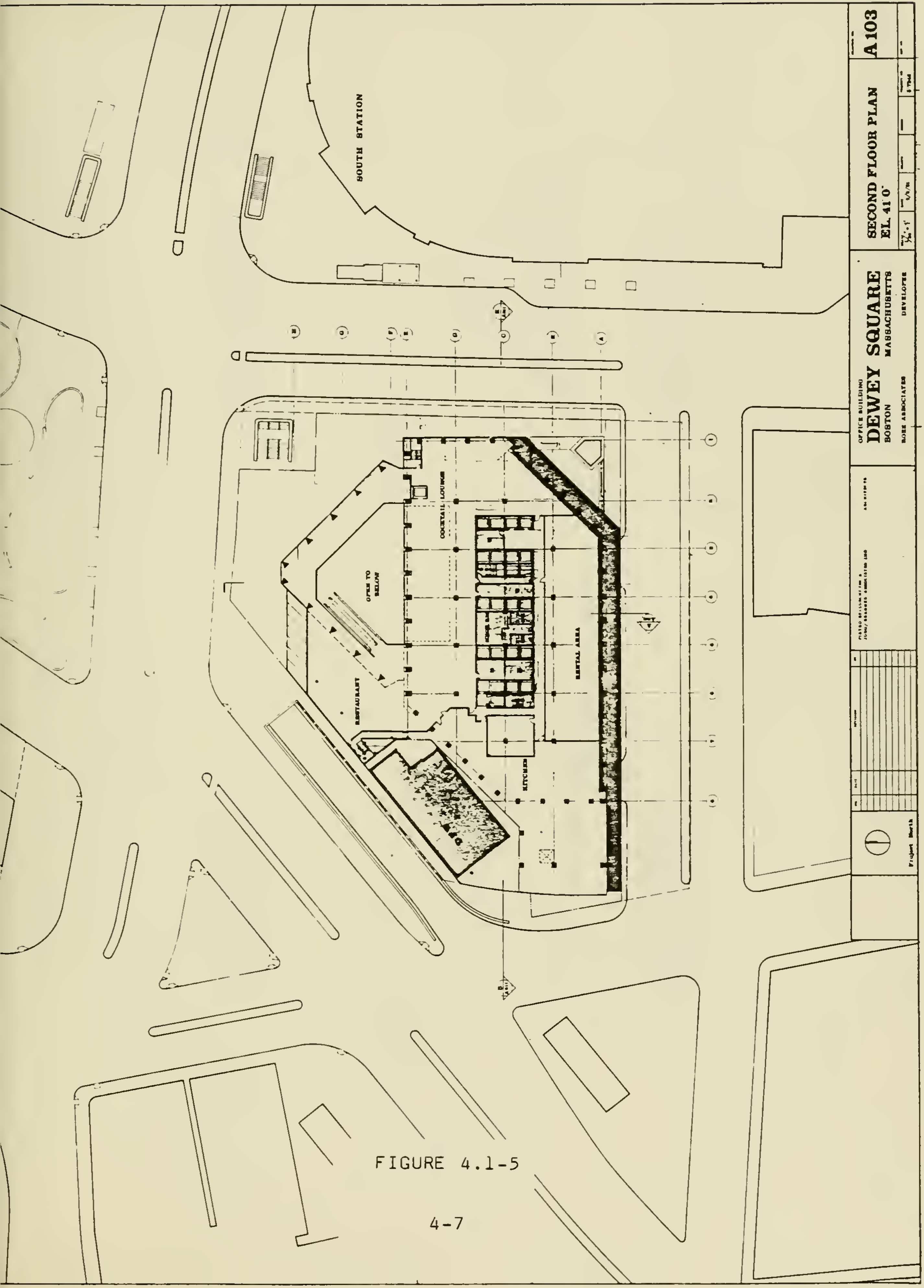

SOUTH STATION
OPEN TO BELOW
COCKTAIL LOUNGE
RESTAURANT
KITCHEN
RENTAL AREA
OFFICE BUILDING
DEWEY SQUARE
BOSTON MASSACHUSETTS
ROSE ASSOCIATES
DEVELOPER
SECOND FLOOR PLAN
EL. 41'0"
A 103
Project North

FIGURE 4.1-5

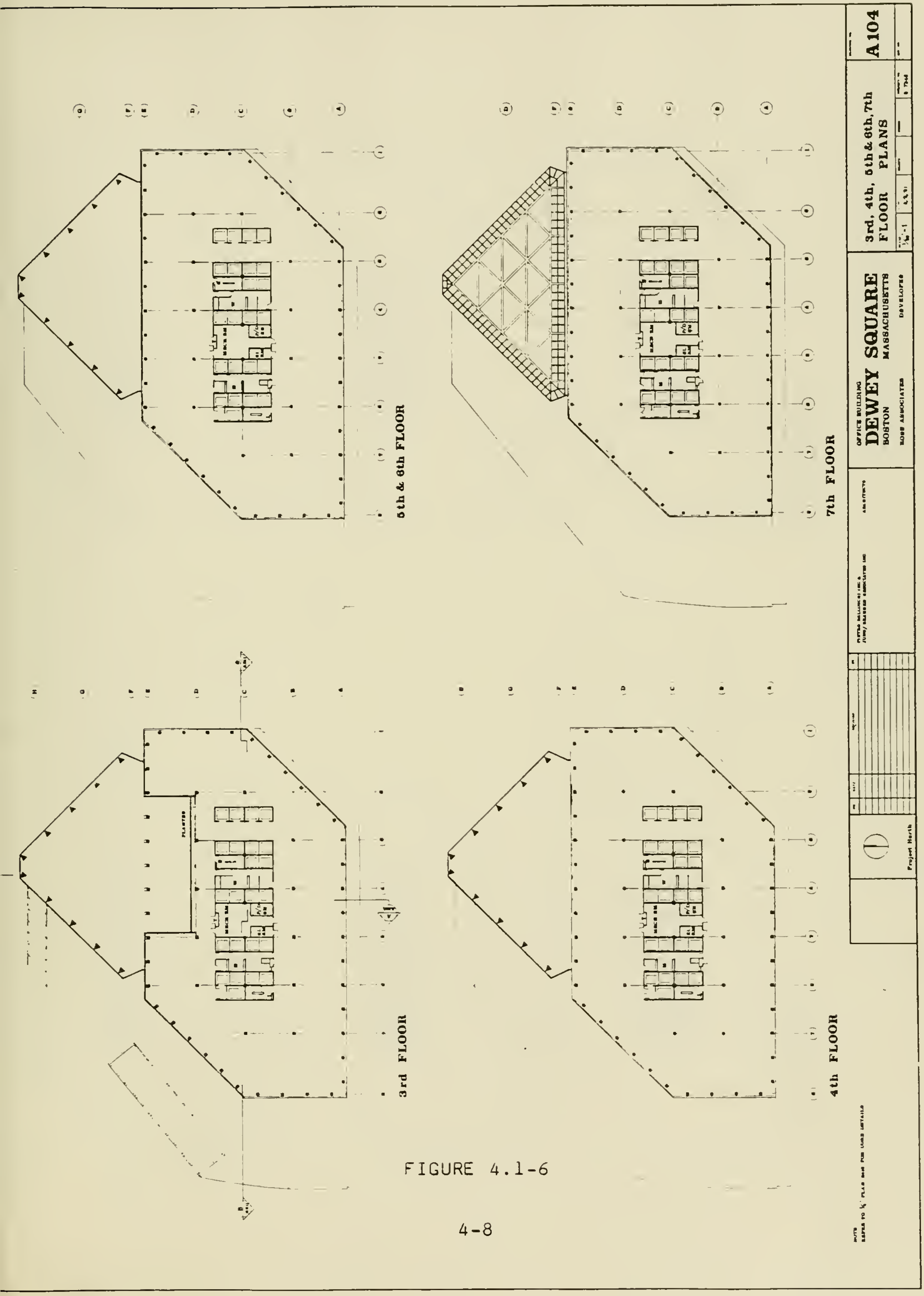

3rd FLOOR
4th FLOOR
5th & 6th FLOOR
7th FLOOR
PLANTER
OFFICE BUILDING
DEWEY SQUARE
BOSTON MASSACHUSETTS
ROSS ASSOCIATES
DEVELOPERS
ARCHITECTS
3rd, 4th, 5th & 6th, 7th FLOOR PLANS
A104
Project North

FIGURE 4.1-6

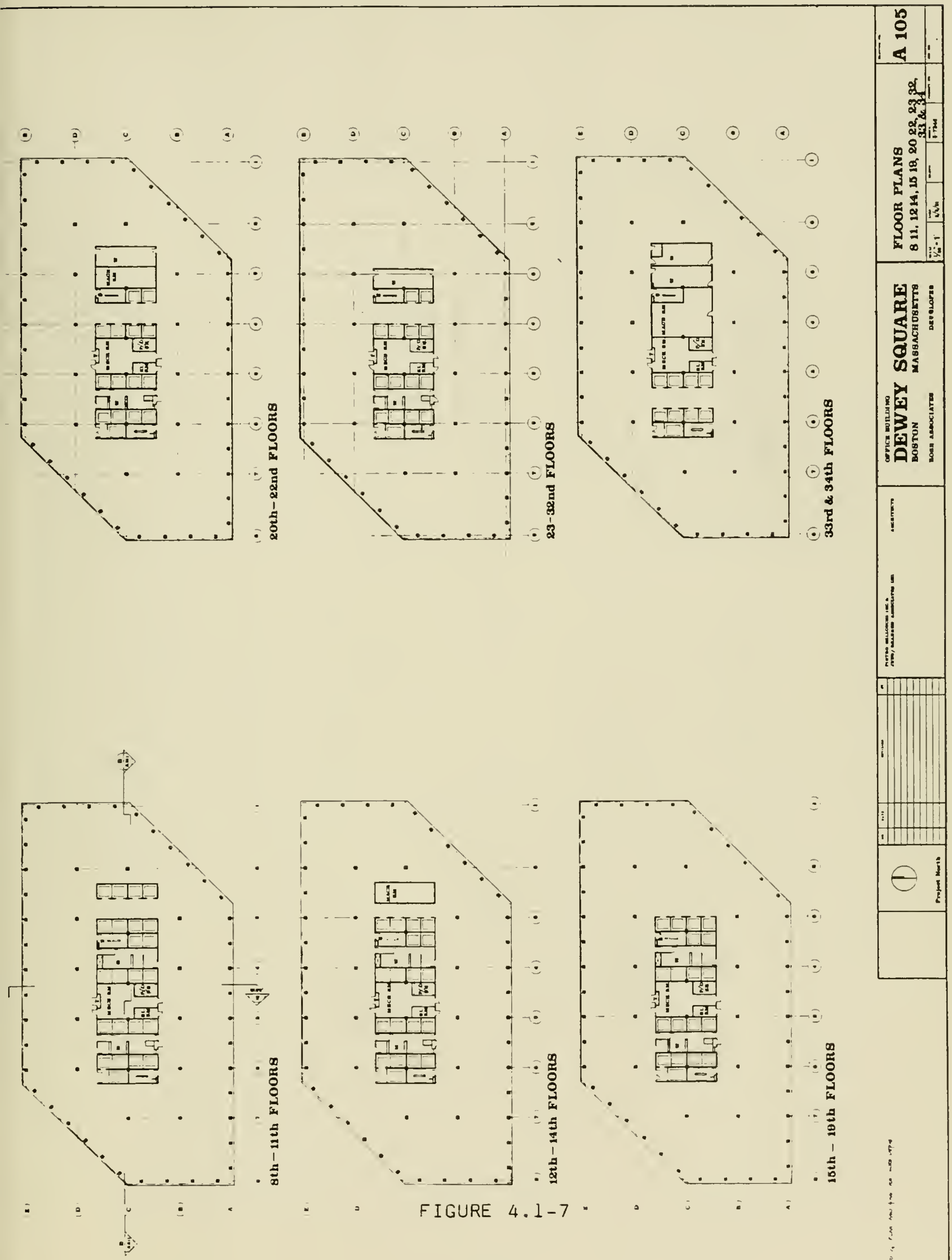

8th – 11th FLOORS
12th – 14th FLOORS
15th – 19th FLOORS
20th – 22nd FLOORS
23 – 32nd FLOORS
33rd & 34th FLOORS
Project North
OFFICE BUILDING
DEWEY SQUARE
BOSTON MASSACHUSETTS
BOSS ASSOCIATES DEVELOPERS
FLOOR PLANS
8 11, 12 14, 15 18, 20 22, 23 32, 33 & 34
1/16"=1'
A 105

FIGURE 4.1-7

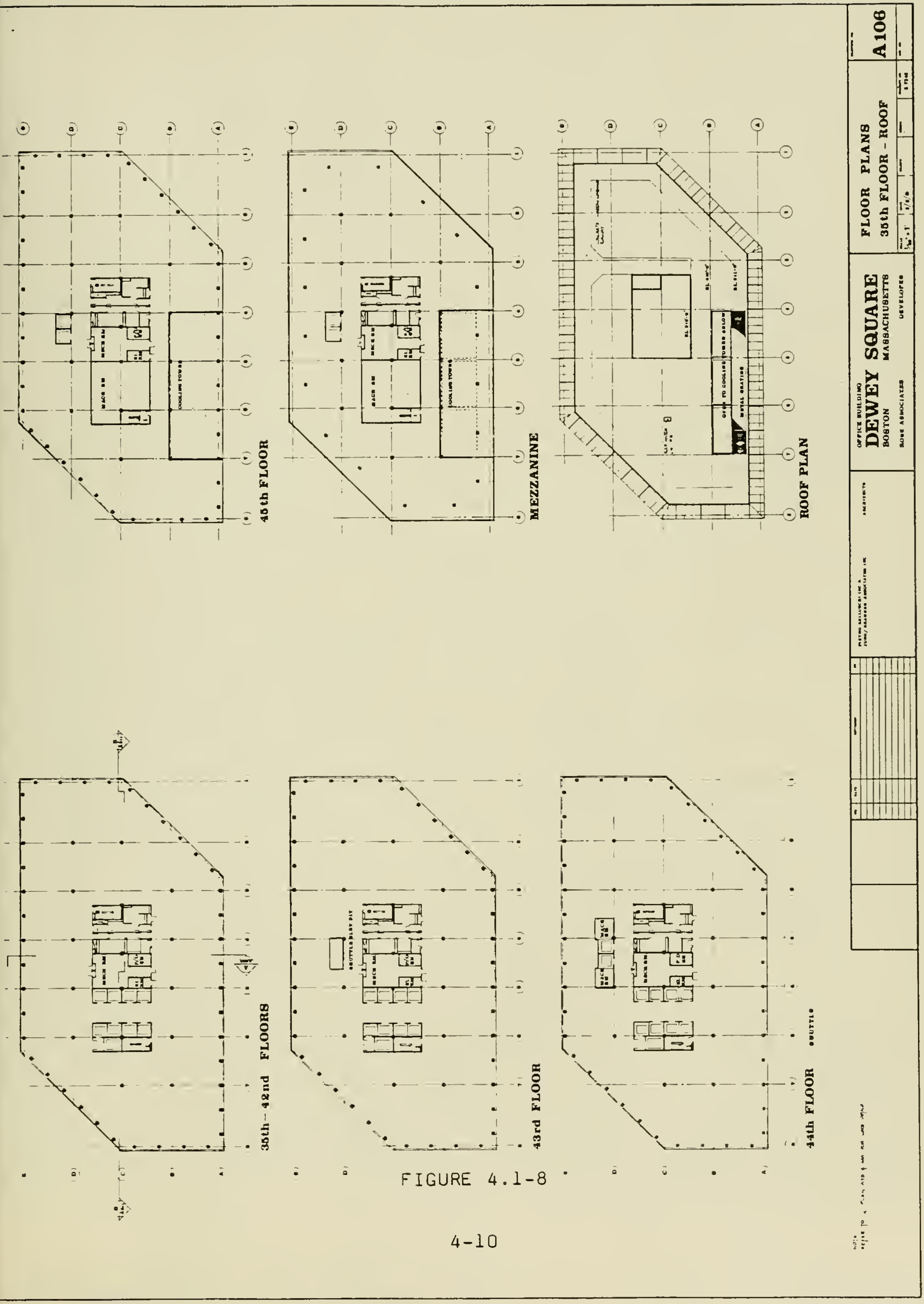

45th FLOOR
MEZZANINE
ROOF PLAN
35th - 42nd FLOORS
43rd FLOOR
44th FLOOR
COOLING TOWER
OPEN TO COOLING TOWER BELOW
METAL GRATING
SHUTTLE
OFFICE BUILDING
DEWEY SQUARE
BOSTON MASSACHUSETTS
BOND ASSOCIATES DEVELOPER
FLOOR PLANS
35th FLOOR - ROOF
A106

FIGURE 4.1-8

4.1.5 Facade and Massing

The street level facade of the Dewey Square Office Building will be dominated by the 6-story entrance gallery facing Summer Street. The entrance gallery has been totally redesigned since the Draft EIR. The new gallery is a 6-story shape with vertical walls and triangular cross-section, as opposed to the 8-story stepped atrium previously proposed. The new gallery has been designed to be more consistent with the shape of the office tower, and to provide a better visual corridor to South Station. Figure 4.1-9 and 4.1-10 compare the original and revised designs. The entrance gallery, which will be glass, serves to connect retail activity within the building to the main outdoor pedestrian route. The remaining building exterior at ground level will be granite. This material has been chosen to relate to the South Station Head House and other surrounding buildings. At street level, for two stories, the building will occupy nearly the entire site. It is intended to reinforce the urban character of the area by meeting the street-line at the sidewalk.

The mass of the office tower is placed on the southern portion of the site. This serves to set the tower back from the major pedestrian route along Summer Street, and scale the building down to the street level environment as shown in Figure 4.1-11.

The exterior of the tower portion of the Dewey Square Office Building will consist of glass and cast stone. Two separate textures of concrete will be used. Above and below each row of windows, semi-smooth 4-foot panels will be fastened. Between these will be a 8-foot 4-inch panels of exposed aggregate. The result will be a 3-tone horizontally striped effect as shown in Figures 4.1-11.

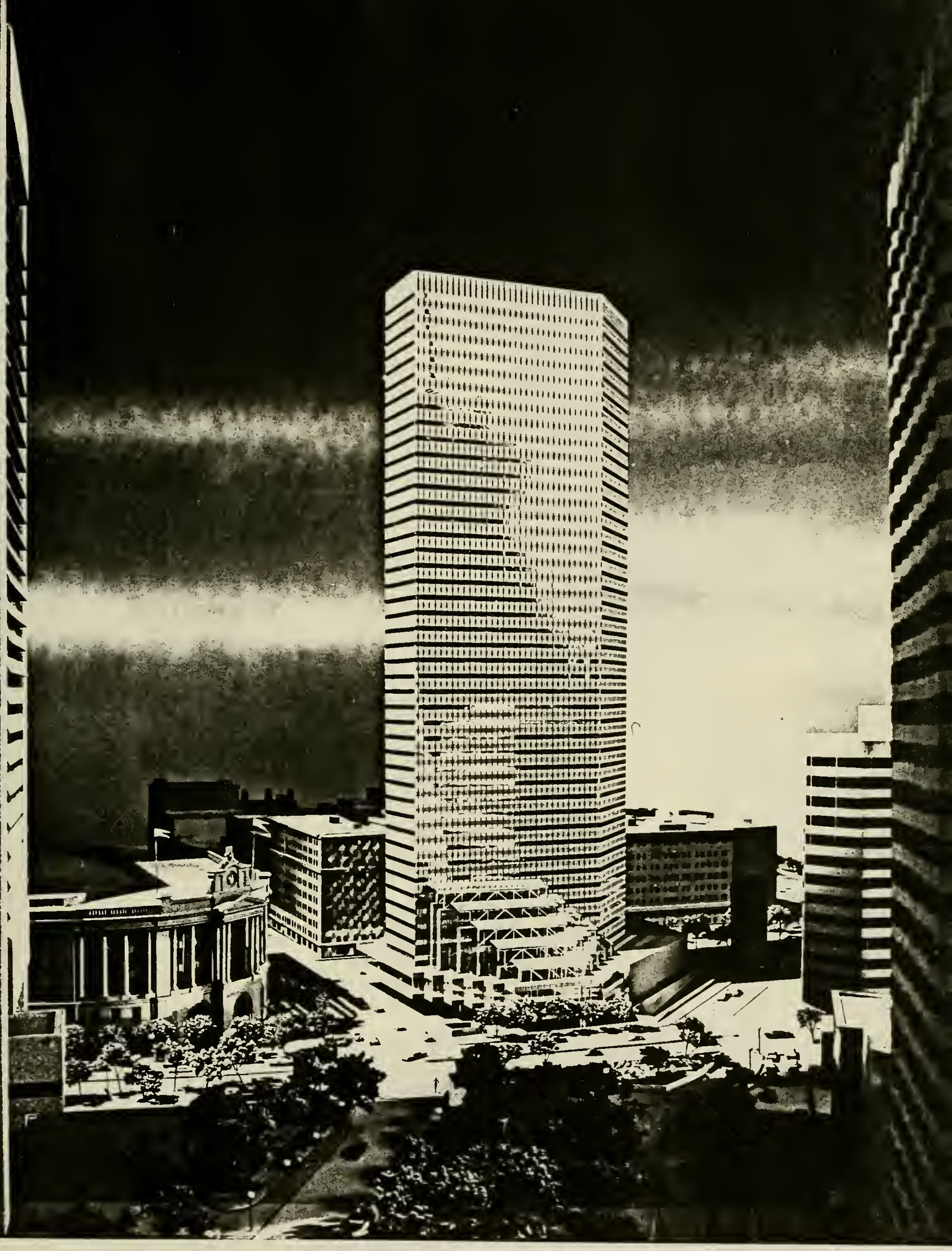


FIGURE 4.1-9 ORIGINAL DESIGN

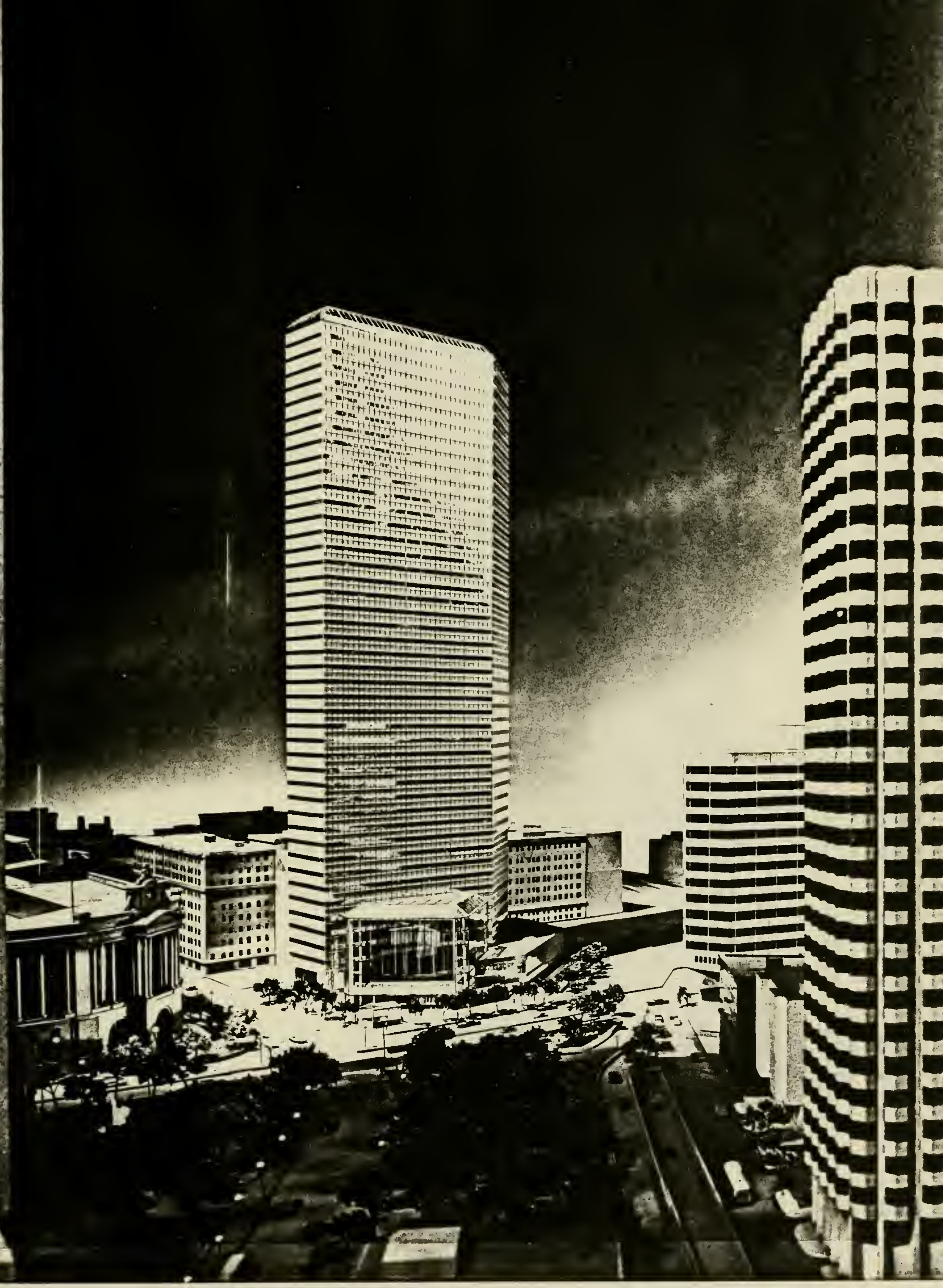


FIGURE 4.1-10 REVISED DESIGN

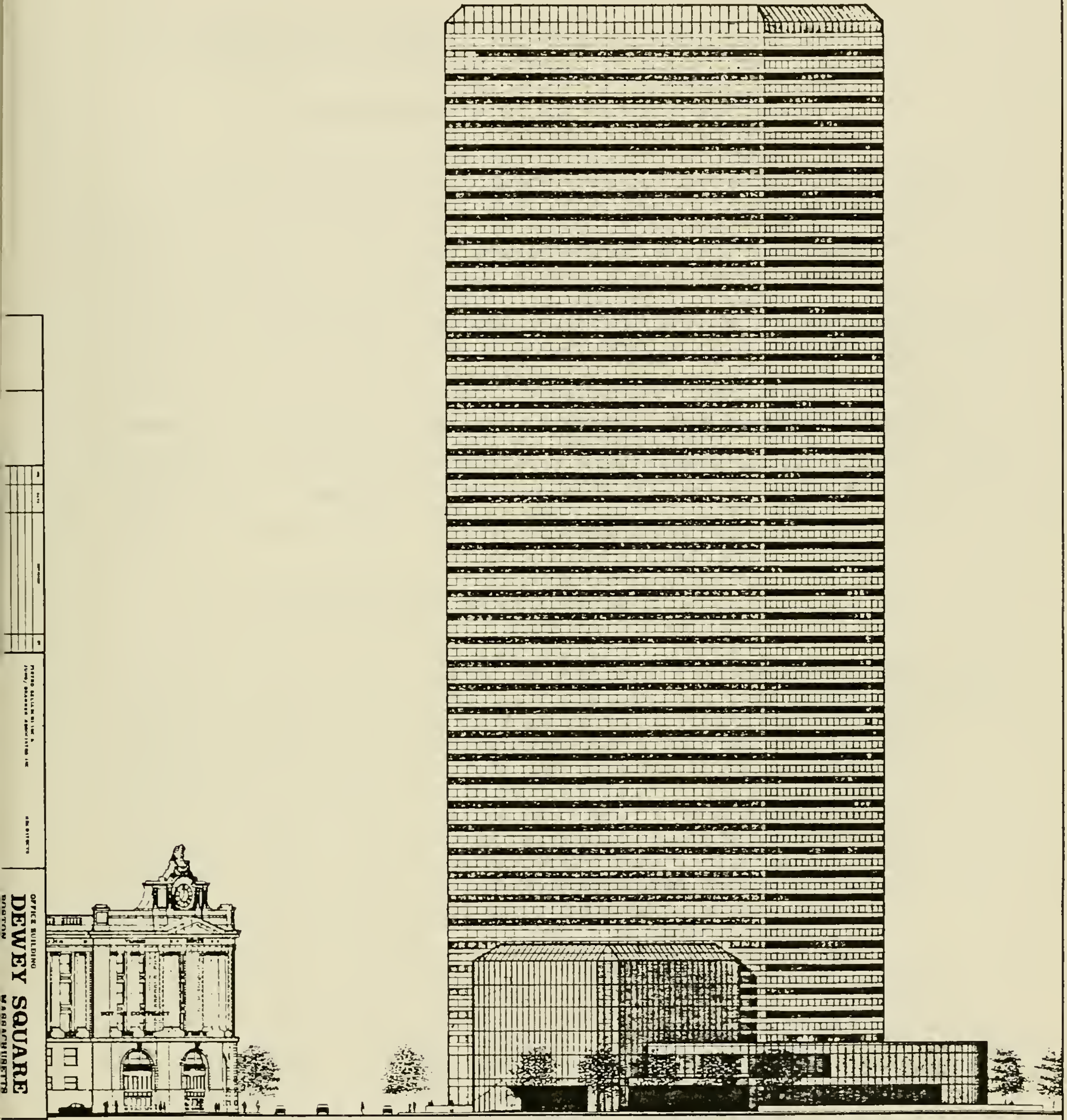

OFFICE BUILDING
DEWEY SQUARE
BOSTON MASSACHUSETTS
NORTH ELEVATION
A 201

FIGURE 4.1-11

4.2 Revised Wind Studies

4.2.1 Introduction

Since the Draft EIR for the Dewey Square Office Building was filed in October, 1980, several relatively minor changes in building design have been suggested by BRA (see Section 4.1). These design changes include modification of the atrium, increased setback from Atlantic Avenue and minor modifications to the first two levels of the building. In order to study the potential effects of these changes, and to respond to several comments on potential for wind impacts, the project proponent sponsored a second round of wind tunnel modeling studies. This section is a summary of the additional wind studies that have been undertaken based on the current design.*

4.2.2 Urban Wind Characteristics

The winds blowing over the earth's surface are slowed and mixed by interaction with trees, buildings, and other features which contribute to surface roughness. The result of this interaction is that the average wind speed increases with elevation above the local terrain up to a level called the gradient height (usually 275 to 400m, or 900 to 1,350 ft.). Above this level, the wind speed is known to be relatively constant and unaffected by the earth's surface details.

High winds at ground level around tall buildings (i.e., buildings of 30 stories or more) result from the interaction between the building and the higher-speed winds that develop at greater heights. The pressure exerted on a building varies with wind velocity, and pressures will be greater near the top than near the bottom of the building. As a result of this

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* The reviewer interested in greater technical detail is advised to read the unabridged study compiled by the Boundary Layer Wind Tunnel Laboratory of the University of Western Ontario. The report is on file with the MEPA unit of the Massachusetts Executive Office of Environmental Affairs.

vertical pressure gradient, the air flows down the building from the high pressure to the low pressure region. This phenomenon results in wind speeds at ground level that are normally associated with higher elevations. High wind speeds at ground level are most pronounced where tall buildings are surrounded by very low buildings. Examples of this situation include the Prudential and John Hancock Towers. At ground level, the higher winds may be accelerated around building corners, producing even higher wind speeds. This corner flow is usually steady high-speed wind that changes to gusty wind as it moves farther from the building. The presence of other nearby buildings can redirect winds and cause additional increases in wind speed due to funneling.

4.2.3 Quantifying the Effects of Wind

The earliest documented attempts to rationally relate wind speeds to their visible environmental effects were made by Admiral Beaufort in 1805. His studies resulted in the development of the Beaufort Scale, which provided his crewmen with the means to estimate wind velocity by observing the effects of wind on the sea, sails, ropes, and fellow crewmen. The original Beaufort Scale wind force levels were subsequently revised to reflect wind effects observed on land. The revised Beaufort Scale formed the basis for developing comfort criteria used in early wind tunnel studies. Table 4.2-1 presents extracts from the Beaufort Scale.

Recently, studies have focused on the effects of wind on pedestrian activity in urban areas. The nature of urban winds has led to further refinement of wind level comfort criteria.* Table 4.2-2 outlines comfort criteria suggested by

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* Several wind engineers and scientists have suggested comfort criteria that may be used to characterize wind levels. No accepted "Standard" exists, but the various comfort criteria are reasonably comparable.

TABLE 4.2-1

EXTRACTS FROM BEAUFORT SCALE

Activity Numbers 1 occ'n/ month	Force	Description	Wind Speeds* (miles/hour)		Specifications
			Mean	Limits	
	2	Light breeze Gentle breeze	5 (4)	4-7 (3-6)	Wind felt on faces; leaves rustle
	3	Gentle breeze	10 (8)	8-12 (6-10)	Leaves and small twigs in constant motion; wind extends light flag
4	4	Moderate breeze	15 (12)	12-18 (10-15)	Raises dust and loose paper; small branches are moved
3	5	Fresh breeze	21 (17)	19-24 (15-20)	Small trees in leaf begin to sway
2	6	Strong breeze	28 (22)	25-31 (19-25)	Large branches in motion; whistling heard in telephone wires; umbrellas used with difficulty
1	7	Moderate gale	35 (28)	32-39 (25-31)	Whole trees in motion; inconvenience felt when walking against wind
	8	Gale	42 (34)	39-46 (31-38)	Breaks twigs off trees; generally impedes progress

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* Wind speed at reference height of 30 ft.; nearer the ground at 6 ft. say the speeds may be about 80% of the mean speeds indicated (figures shown in brackets).

Source: Davenport, A.G.

TABLE 4.2-2

SUGGESTED COMFORT CRITERIA FOR WINDINESS BASED ON MEAN WIND SPEEDS

	"Tolerable" Limit	"Unpleasant" Limit	"Hazard" Limit
1. Pedestrian Traffic	22	28	34
2. Strolling, Skating	17	22	34
3. Standing, Sitting (short exposure)	12	17	34
4. Standing, Sitting (long exposure)	8	12	34

"Tolerable" limit is suggested for less than once per week.

"Unpleasant" limit is suggested for less than once per month.

"Hazard" limit is suggested for less than once per year.

Source: A Study of the Impact of the Dewey Square Project, Boston, On the Pedestrian Level Wind Environment. D. Surry and P. J. Vickery, August 1980.

A. G. Davenport, a known authority in wind engineering. These criteria suggest that comfort varies both according to the type of activity, and according to the frequency of occurrence of the wind speeds. Higher wind speeds are more acceptable for the more active pedestrian functions, while lower wind speeds are required to accommodate more sedentary outdoor activities. Likewise, higher wind speeds will be perceived to be acceptable on an infrequent basis (i.e., higher wind speeds may be more readily accepted on a once-per-month basis than once-per-week).

Another means for quantifying the effects of wind is direct comparison. Winds with the Dewey Square Office Building, for instance, may be compared to wind levels without it, or winds at the project site may be compared to wind levels at other sites. Potential impacts associated with the proposed development can then be measured by observing changes in winds attributable to the development and its environs.

4.2.4 Approach to Analysis

The data required for wind impact analysis has been generated with a detailed wind tunnel modeling study. The basic tool used in the study was the University of Western Ontario boundary layer wind tunnel. This wind tunnel is designed with a very long test section, which allows extended models of upwind terrain to be placed in front of the model of the building under test. The wind tunnel flow then develops characteristics which are similar to the wind approaching the actual site. In this case, wooden models of the site before and after development were constructed to a scale of 1:500. This scale is determined by the properties of the wind tunnel boundary layer in relation to those of the real atmospheric wind. (Figure 6.1-1 in the Draft EIR shows the wind tunnel with the previous Dewey Square Office Building model mounted.)

The site was centered within a detailed model of the immediate surroundings. The "proximity model" extended for a full scale radius of 2,000 feet around the detailed model.

It was built to best approximate the surroundings when the Dewey Square Office Building is completed. In this way, the impact of the Dewey Square project itself can be determined. The proximity model, however, includes effects due to some structures not yet in existence, such as those associated with the South Station development. This means that some of the measured wind speeds, both with and without the Dewey Square Office Building, include effects due to structures not yet in existence.*

The entire model of the site and its immediate surroundings was rotated to simulate various wind directions. The proximity model was preceded by the equivalent of about five miles of approximately modeled terrain in order to develop a representative model of the wind. The upstream terrains were modeled coarsely using roughnesses representative of the actual site topography. Three different upwind terrain models were used. (They are illustrated in Figure 6.1-1 of the Draft EIR.)

In order to make meaningful predictions of the frequency of selected wind speeds around the site, it is convenient to derive a model of the expected mean wind speeds and directions at gradient height. This has been previously accomplished for the Boston area.** The significant result of that study is the probability distribution of gradient winds shown in Figure 4.2-1. On the plot, the magnitude of the radial coordinate is the gradient wind speed exceeded with the probability indicated by the contour values, for wind directions within a 22.5° range centered on the direction considered. From Figure 4.2-1, the direction of the more common winds, regardless of speed, as indicated by the 10^{-2} contour, is westerly. However, the likely directions of strong winds, as indicated by the 10^{-6}

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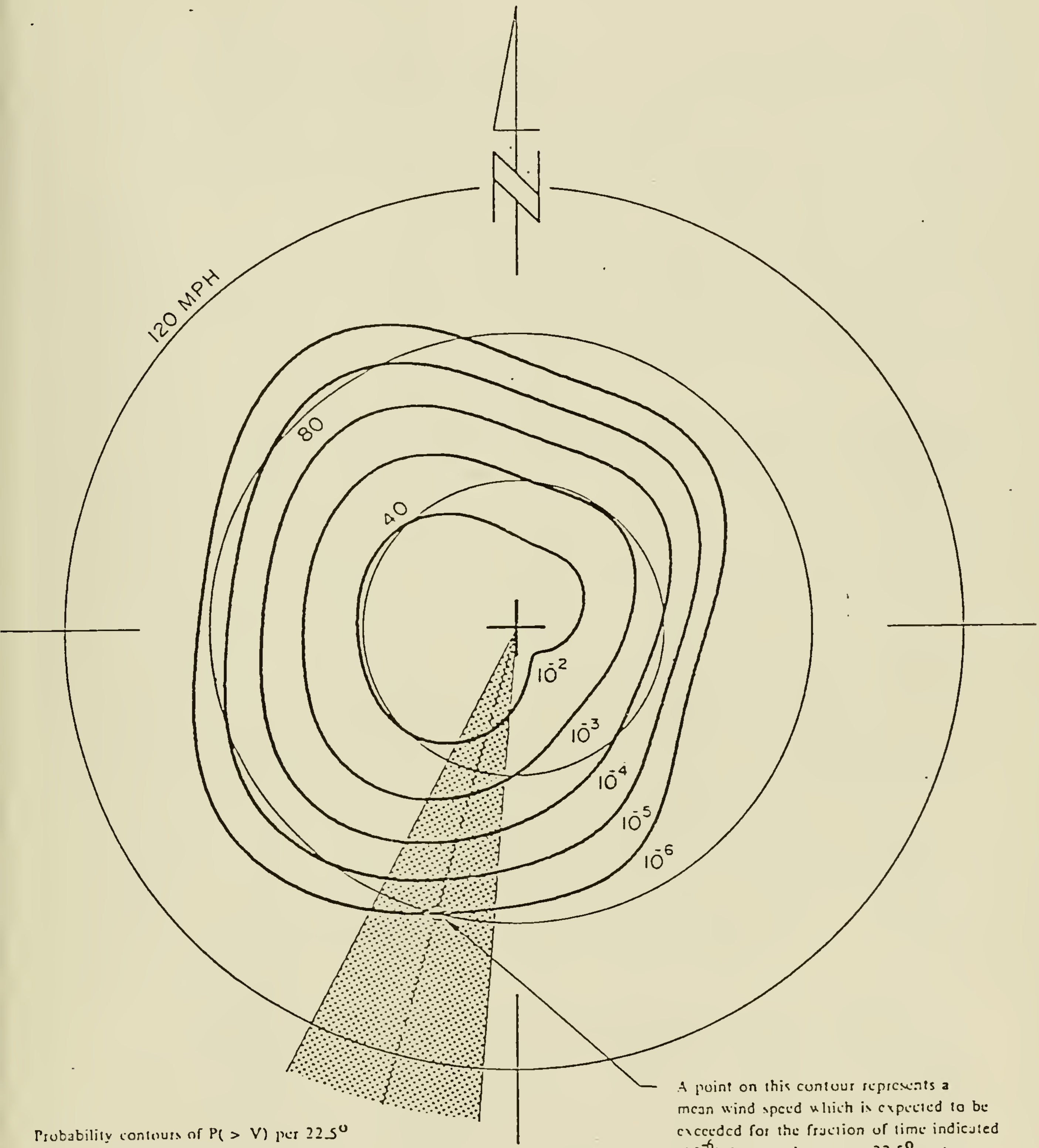
* Wind tunnel modeling has been undertaken both with and without the South Station towers included in the proximity model. Likewise, modeling has been undertaken with and without a building on the vacant lot across Essex Street from the site. The results reported in this Final EIR, however, are based on the proximity model with the proposed South Station towers and with a vacant lot across Essex Street.

** A Study of the Wind Induced Response of the John Hancock Tower, Boston, The University of Western Ontario BLWT, July 1975.



Probability contours of P(> V) per 22.5° sector have been derived from analysis of full scale upper air observations of wind speed and direction

A point on this contour represents a mean wind speed which is expected to be exceeded for the fraction of time indicated (10^{-6}) from angles over a 22.5° sector centred on the point. For the shaded sector shown, this wind speed is 80 mph.

FIGURE 4.2-1
CUMULATIVE PROBABILITY DISTRIBUTION OF GRADIENT WINDS FOR BOSTON (500 m. pibal data, 1945–1964)

contour, are somewhat more uniformly distributed. In general, it is the more common winds that are of greatest interest when considering pedestrian level wind conditions.

For the Dewey Square Office Building studies, the reporting has focused on two data sets: wind speeds exceeded 1% of the time (3-4 days per year) and wind speeds exceeded 20% of the time (about 70 days per year). These two data sets were specified in the MEPA scope of studies for the EIR. The 1% data set was selected to represent practical "worst-case" conditions at the site. The 20% data set was selected to represent a more frequently occuring "adverse case".

Wind tunnel modeling was undertaken for several development scenarios. Major emphasis was placed upon testing the revised Dewey Square Office Building design versus the "no-build" case. In addition the project architects worked with the wind engineers to identify a range of mitigating measures. Candidate measures were selected based on observations of wind flow patterns in wind-tunnel testing. Both landscaping and structural elements were tested. From the initial screening process four mitigating measures emerged as candidates for more extensive testing. Mitigating measure A is the placement of trees in the median of relocated Essex Street; mitigating measure B is the placement of a canopy at the corner of the proposed building at Atlantic Avenue and Essex Street; mitigating measure C is the placement of trees along the east side of Atlantic Avenue adjacent to South Station; and mitigating measure D is the placement of a pedestrian bridge between the Dewey Square Office Building and South Station.

For the build versus no-build comparisons, wind speed measurements were taken from 31 ground-level receptor locations. Figure 4.2-2 shows these locations, as well as the placement of trees suggested as mitigating measures. These were the same receptor locations used in the original wind tunnel modeling effort reported in the Draft EIR.* The mitigating measures were

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* Receptor locations 32 (above ground level) and 33 (a remote site at Federal and Franklin) were not included in this round of tests.

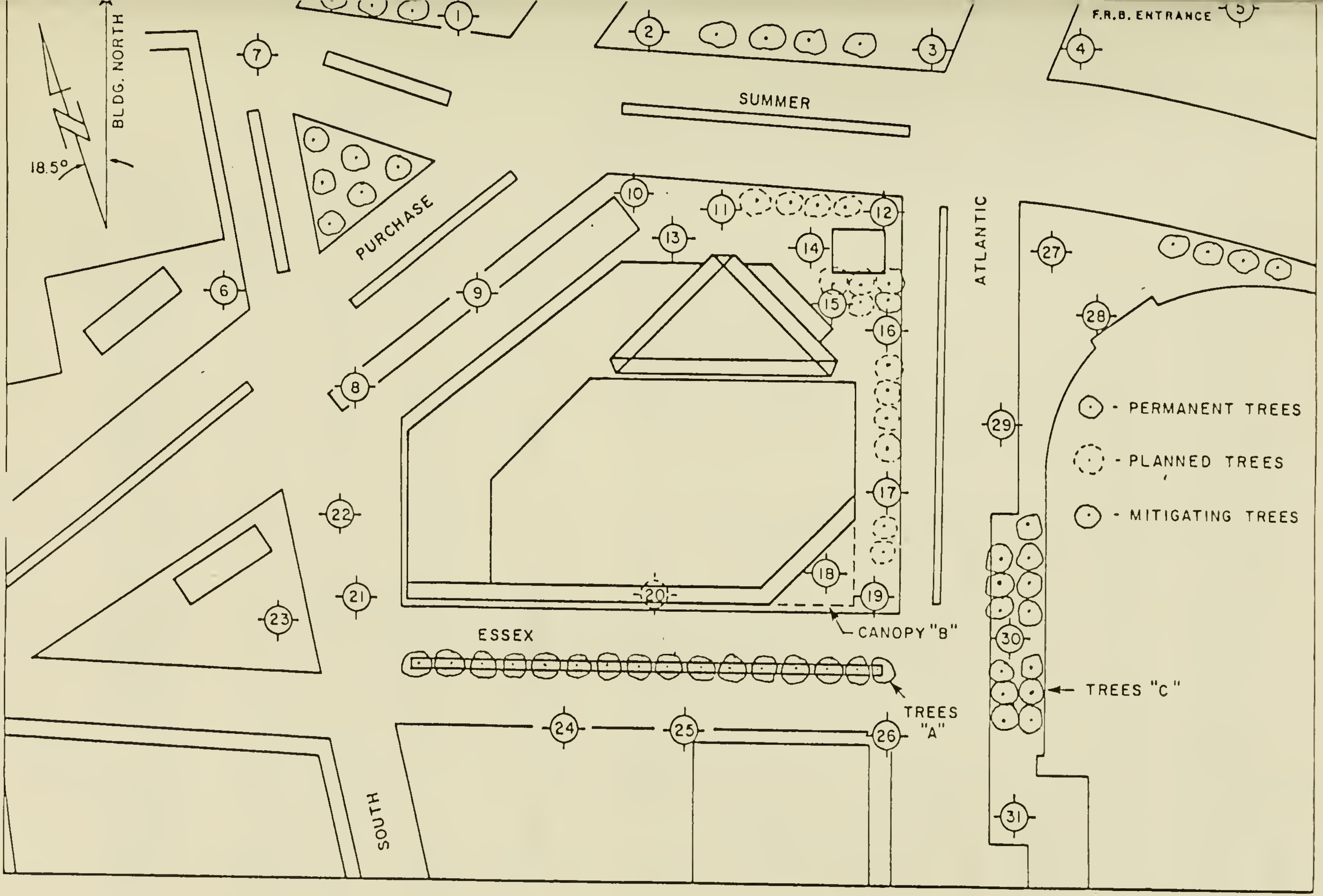

FIGURE 4.2-2 - GROUND LEVEL RECEPTOR LOCATIONS

tested at 13 of the 31 receptor locations. The 13 sites for testing the mitigating measures were selected after reviewing the data sets from the 31 receptor locations without mitigating measures.

All wind speed measurements were made using linearized single-ended cylindrical hot-film sensors which are omnidirectional and measure both the mean and the fluctuating components of the wind speed parallel to the ground at a height of about 8 feet full scale.

For each configuration examined, the experimental program comprised measurements of maximum, minimum, mean and RMS (root-mean-square) wind speeds at each receptor location for a full range of wind directions varied in steps of 10° starting at true north. The sampling time in all cases (30 seconds in model scale) was chosen to provide stable estimates for the mean and RMS wind speeds and to correspond to approximately 1 hour in full scale. The measured pedestrian level wind speeds were subsequently expressed in miles per hour (mph). All measurements were carried out using the automated computer-controlled data acquisition system available at the Laboratory.

4.2.5 Mean Wind Speeds Exceeded During 1% and 20% of the Time

Predictions of the mean wind speeds exceeded 1% and 20% of the time on an annual basis are presented in Tables 4.2-3 and 4.2-4, respectively.* In each table, the first column indicates the receptor number and location. The second column indicates the modeled wind speeds for the "no-build" case. The third column outlines the wind speeds associated with the site area subsequent to the development of the Dewey Square Office

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* Wind speed data other than mean winds are discussed in the technical report compiled by the University of Western Ontario. Only mean wind speed is discussed here since the comfort criteria of Table 4.2-2 are based upon mean wind speed data.

TABLE 4.2-3

MEAN WIND SPEEDS EXCEEDED 1% OF THE TIME, mph

Receptor Location	Revised No Build	Revised Build	Trees A & C	Bridge	Trees A & C and Bridge (Computed)
1. Summer Street	10.9	13.0			
2. Summer Street	19.3	20.9			
3. Summer Street	17.9	20.4			
4. Summer Street	17.8	14.2			
5. Federal Reserve		13.5			
6. South Street	10.9	17.0			
7. South Street		12.2			
8. Purchase Street	14.7	17.1			
9. Purchase Street	13.5	17.8			
10. Summer Street	15.7	18.2			
11. Summer Street		18.7			
12. Site	10.1	13.1			
13. Site		14.2			
14. Site	13.0	13.0	12.9	12.5	12.4
15. Site		8.5			
16. Site	14.2	9.5	9.2	9.9	9.6
17. Site		23.2	22.7	20.0	19.6
18. Site		15.1	14.9	16.5	16.3
19. Site	9.5	23.4	22.9	22.5	22.0
20. Site		7.5			
21. South Street	15.5	19.6	18.4	19.2	18.0
22. South Street		12.9			
23. West of Site	15.8	19.1			
24. Essex Street	11.6	17.4			
25. Essex Street	13.8	21.4	21.0	21.8	21.4
26. Atlantic Avenue	14.5	15.2	16.0	15.8	16.6
27. South Station	18.0	24.8	25.5	22.8	23.4
28. South Station	19.7	24.3	17.3	18.7	13.3
29. South Station	12.8	28.2	26.2	23.4	21.7
30. South Station	13.3	11.9	11.7	11.3	11.1
31. South Station	19.4	17.5	18.0	17.7	18.2
Typical Suburban	13.4				
Typical Open Country	25.8				

TABLE 4.2-4

MEAN WIND SPEEDS EXCEEDED 20% OF THE TIME, mph

Receptor Location	Revised No Build	Revised Build	Trees A & C	Bridge	Trees A & C and Bridge (Computed)
1. Summer Street	5.8	6.3			
2. Summer Street	9.6	10.3			
3. Summer Street	9.3	10.2			
4. Summer Street	9.2	7.0			
5. Federal Reserve		6.5			
6. South Street	5.9	8.5			
7. South Street		5.9			
8. Purchase Street	7.7	9.0			
9. Purchase Street	6.9	9.4			
10. Summer Street	7.7	9.7			
11. Summer Street		9.8			
12. Site	5.2	6.9			
13. Site		7.5			
14. Site	6.8	6.9	6.8	6.6	6.5
15. Site		4.6			
16. Site	7.8	4.8	4.8	4.7	4.7
17. Site		9.8	9.9	9.2	9.3
18. Site		5.3	5.5	5.4	5.6
19. Site	5.0	11.2	10.7	10.8	10.3
20. Site		3.8			
21. South Street	7.6	8.0	7.8	7.9	7.7
22. South Street		6.0			
23. West of Site	7.6	9.2			
24. Essex Street	5.6	8.2			
25. Essex Street	5.5	11.4	11.1	11.4	11.1
26. Atlantic Avenue	6.7	8.2	8.2	8.1	8.1
27. South Station	9.4	10.4	10.2	9.7	9.5
28. South Station	9.6	10.0	7.0	7.7	5.4
29. South Station	6.3	13.0	11.4	11.1	9.7
30. South Station	5.8	6.2	6.9	6.3	7.0
31. South Station	8.4	9.3	9.3	9.2	9.2
Typical Suburban	7.7				
Typical Open Country	14.7				

Building. Columns four through six indicate the wind levels resulting from three mitigation scenarios. The first mitigation scenario, reflected in column four, consists of introducing trees as windbreaks in locations A and C as shown on Figure 4.2-2. The second mitigation scenario, reflected in column five, is the addition of the proposed pedestrian bridge by the BRA (D) between South Station and the new office building. The third mitigation scenario combines measures A, C, and D.*

A comparison of the test data in Table 4.2-3 to the suggested comfort criteria previously outlined in Table 4.2-2 leads to several conclusions. First, the mean wind speeds at all locations, in all cases tested, were well below the suggested 34 mph "hazard limit". Construction of the Dewey Square Office Building, with or without mitigating measures appears to present no physical hazards to pedestrians. Second, mean wind speeds associated with the new building are higher than no-build wind speeds at most receptor locations. In most cases, however, the increases in local wind speeds are not significant.

The project-related increases in wind speeds at five of the receptor locations warrant individual discussion. These are receptors 29, 27, 28, 25 and 19, as shown on Figure 4.2-3. These five receptors lie within the Essex Street/Atlantic Avenue Corridor where the funneled southwest winds result in highest predicted mean wind speeds.

Receptor 29 The Curbside East of Atlantic Avenue, Adjacent to South Station

This is the receptor location with the greatest project-related wind speeds. Mean wind speeds exceeded 1% of the time increase from 12.8 mph, with no new construction on the site,

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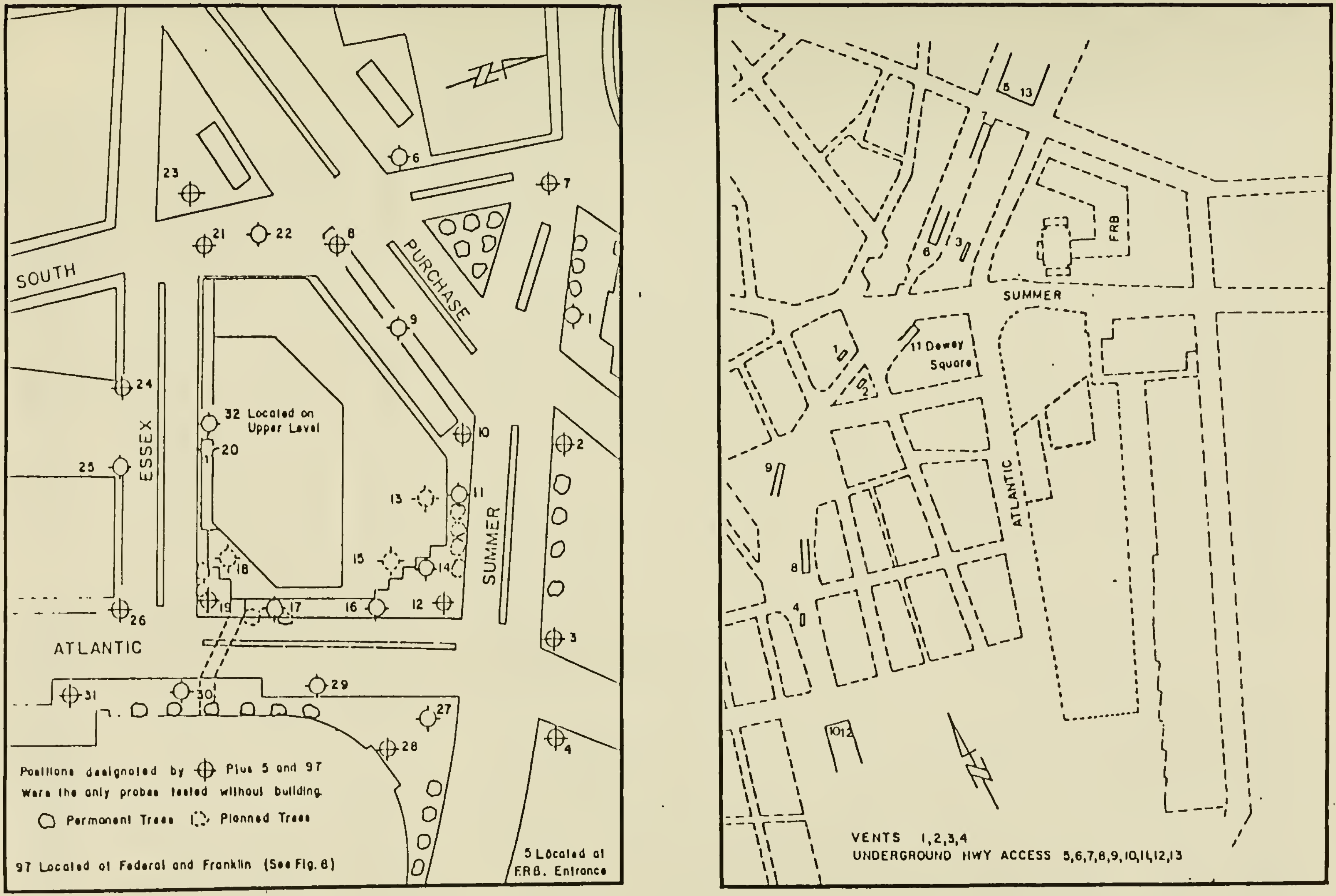
* Mitigation scenario three reflects the addition of mitigation measures in scenarios one and two. These values were computed rather than modeled. Also note that the effectiveness of introducing the canopy at location B was tested. No significant reductions in wind levels were found. This data has been deleted to streamline reporting.


SOUTH
ESSEX
ATLANTIC
PURCHASE
SUMMER
32 Located on Upper Level
Positions designated by ⊕ Plus 5 and 97 Were the only probes tested without building.
○ Permanent Trees ◌ Planned Trees
97 Located at Federal and Franklin (See Fig. 8)
5 Located at F.R.B. Entrance
1
2
3
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6
7
8
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10
11
12
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15
16
17
18
19
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21
22
23
24
25
26
27
28
29
30
31
FRB
SUMMER
ATLANTIC
11 Dewey Square
5 13
VENTS 1,2,3,4
UNDERGROUND HWY ACCESS 5,6,7,8,9,10,11,12,13
10 12

FIGURE 4.2-3 KEY TO MEASURING LOCATIONS

to 28.2 mph with the proposed development.* Mean wind speeds exceeded 20% of the time increase from 6.3 mph to 13.0 mph. This means that the peak winds on a few days per year approach the "unpleasant" limit for pedestrian traffic. On these few peak wind days pedestrian commuting will be the only feasible activity possible at Location 29. Under more normal circumstances, as represented by the 20% case, wind levels will be well within "tolerable" limits for more leisurely activities. Only the most passive activities, such as sitting to read, will be precluded by the 20% mean wind speeds. Nonetheless, the doubling of wind speed at this location is a noteworthy change.

The introduction of trees at locations A and C reduces the peak mean wind speeds exceeded 1% of the time from 28.2 mph to 26.2 mph, enough to bring the site clearly below the suggested "unpleasant" limit for pedestrian traffic. The introduction of the future pedestrian bridge across Atlantic Avenue reduces project-related 1% mean wind speeds from 28.2 mph to 23.4 mph, a reduction slightly greater than that associated with the trees, but one that appears to allow no more passive activities in this location. If both the trees and the bridge are included as mitigating measures, the 1% winds increase slightly to 21.7 mph. This means that little benefit is derived at Receptor 29 from implementing both, rather than one of the mitgating scenarios.

Receptor 27 The Corner of Atlantic Avenue and Summer Street

Mean wind speeds exceeded 1% of the time increase from 18.0 mph to 24.8 mph with the proposed development, while the 20% winds increase from 9.4 mph to 10.4 mph. At this location all activities except pedestrian commuting will be "unpleasant" during peak wind periods (1% winds). During normal conditions, however, there will be little if any perception of increased

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* The criterion suggests that mean wind speeds not exceed 28 mph more than once per month. Therefore, the predicted 28.2 mph mean wind speed 1% of the time is close to the suggested limit.

wind speeds at this location. The 10.4 mph winds observed 20% of the time should interfere with only the most passive outdoor recreation activities.

At receptor Location 27, the introduction of trees at A and C increases the 1% mean wind speed from 24.8 mph to 25.5 mph. The peak winds are increased slightly, rather than mitigated. The 20% winds decrease slightly from 10.4 mph to 10.2 mph with the addition of the trees, but such a decrease is negligible. Construction of the pedestrian bridge decreases the 1% winds from 24.8 mph to 22.8 mph and the 20% winds from 10.4 mph to 9.7 mph. These decreases result in no changes in the types of pedestrian activity possible at the site. Only pedestrian commuting activity will be possible during peak winds; given the street corner location, however, this should not be much of a restriction. Under the 20% winds, much more passive activity could be accommodated.

Introducing both the bridge and the trees as mitigating measures appears to serve no useful purpose. Mean wind speeds exceeded 1% of the time are slightly increased from using the bridge alone as a mitigating measure. 20% wind speeds decrease from 9.7 mph, with just the bridge, to 9.5 mph with both the pedestrian bridge and the trees and A and C.

Receptor 28 The Entrance to South Station

Mean winds at the entrance to the South Station Headhouse are predicted to increase from 19.7 mph to 24.3 mph upon completion of the Dewey Square Office Building. The 20% winds are predicted to increase from 9.6 mph to 10.0 mph. The less frequent winds (20%) present no measureable impact on the wind environment. During peak wind conditions, the increased winds will be "unpleasant" for any activity other than pedestrian commuting. The increased winds may be perceived as a particular nuisance in this area, however, since it is a major pedestrian access point.

The introduction of trees as windbreaks in locations A and C significantly reduces peak winds at the entrance to the

Headhouse. The 1% mean wind speeds drop from 24.3 mph to 17.3 mph with the trees. The 20% winds also decrease from 10.0 mph to 7.0 mph. These decreases should be clearly perceptible during both peak and adverse wind periods. The reduction at this location brings wind speeds below the 19.7 mph and 9.6 mph associated with "no-build" as well. This means that wind conditions may be slightly improved at this critical location, if mitigating measures are implemented.

Similar mitigation is possible with the use of the pedestrian bridge across Atlantic Avenue. The 1% and 20% winds are reduced to 18.7 mph and 7.7 mph, respectively. These reductions are not quite as large as the reductions associated with the trees.

Combining the trees and the bridge results in even greater reductions in wind speeds at this receptor location. However, there appears to be no need to seek greater reductions than those possible with either the trees or the bridge singly.

Receptor 25 The South Side of Essex Street, at the Rear Corner of the Essex Hotel

The 1% mean wind speeds increase from 13.8 mph with the "no-build" to 21.4 mph. The 20% mean wind speeds increase from 5.5 mph to 11.4 mph with the introduction of the new office tower. In absolute terms, these are large increases in predicted wind speeds. The increases, however, do not exceed the "unpleasant" or "tolerable" comfort criteria suggested in Table 4.2-2. Since no present or planned activities specify passive pedestrian activities at this site, the predicted wind speeds should be acceptable.*

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* The project proponent owns the vacant site at this location. No specific development plans have been adopted at this time, but it is likely that this site will be developed within the next few years. With development on this site, wind levels at this receptor and at Receptor 27, 28, and 29 will be decreased in the opinion of the wind engineers conducting the wind tunnel modeling.

Mitigating measures seem to result in negligible reductions in wind speeds. The trees at A and C reduce predicted mean wind speeds from 21.4 mph to 21.0 mph for mean wind speeds and from 11.4 mph to 11.1 mph for the 20% winds. The bridge results in no improvements from the unmitigated case. The lack of improvement should be no surprise, since the receptor site is upwind of the mitigating measures. (Note that it is winds from the southwest that cause peak wind for the Dewey Square Office Building Site.)

Receptor 19 The Southeast Corner of the Dewey Square Office Building Site

Mean wind speeds exceeded 1% of the time increase from 9.5 mph under the "no-build" case to 23.4 mph with the proposed project in place. Mean wind speeds exceeded 20% of the time increase from 5.0 mph to 11.2 mph. This means that the southeast corner of the site may be used only for pedestrian commuting on the peak wind days each year, but less active use will be tolerable at most times.

The mitigating measures reduce the 1% mean wind speeds to 22.9 mph, with trees at A and C, to 22.5 mph with the pedestrian bridge, and to 22.0 mph with both measures. These nominal reductions will have no effect on pedestrian activity at the site. The mitigating measures reduce the 20% wind speeds from 8.0 mph with no mitigating meaures, to 7.8 mph with trees at A and C, to 7.9 mph with the pedestrian bridge and to 7.8 mph with both. It is doubtful that these reductions in wind speeds will be perceived as significant by the public.

General Conclusion

Wind speeds will be increased with the introduction of the Dewey Square Office Building. Some of the predicted increases in mean wind speeds are large increases. The increases, however, do not result in hazardous conditions. Neither do they affect the feasibility of existing pedestrian activities on or near the site.

The mitigating measures suggested for investigation by the wind engineers have been tested in the wind tunnel. It appears that small reductions in wind speeds can be achieved through the use of trees as windbreaks, or by developing a pedestrian bridge across Atlantic Avenue between the new office building and South Station. With one exception, it is questionable whether the level of wind reduction warrants consideration of any of the mitigation measures considered. Reductions are small enough that no more passive uses of the area are associated with the predicted wind levels. The one exception is receptor Location 28, the entrance to the South Station Headhouse. At this location, either migitation scenario appears beneficial, with the trees slightly more effective than the bridge. Reductions, with mitigation, may be perceived as significant in this heavy pedestrian traffic location.

APPENDIX A

SCOPE FOR EIR

The Commonwealth of Massachusetts
Executive Office of Environmental Affairs
100 Cambridge Street
Boston, Massachusetts 02202

EDWARD J. KING
GOVERNOR

JOHN A. BEWICK
SECRETARY

CERTIFICATE OF THE SECRETARY OF ENVIRONMENTAL AFFAIRS

ON

ENVIRONMENTAL NOTIFICATION FORM

PROJECT NAME: Dewey Square Office Building

EOEA NUMBER: 03810

PROJECT PROPONENT: Rose Associates

DATE NOTICED IN MONITOR: June 23, 1980

Pursuant to M.G.L., Chapter 30, Section 62A, and Section 10.04(9) of the Regulations Governing the Implementation of the Massachusetts Environmental Policy Act, I hereby determine that the above referenced project does require an Environmental Impact Report.

7/21/80
DATE

JOHN A. BEWICK, SECRETARY

FORM A

The Commonwealth of Massachusetts
Executive Office of Environmental Affairs
100 Cambridge Street
Boston, Massachusetts 02202

EDWARD J KING
GOVERNOR
OHN A BEWICK
SECRETARY

DETERMINATION OF THE SECRETARY OF ENVIRONMENTAL AFFAIRS OF SCOPE AND ALTERNATIVES FOR ENVIRONMENTAL IMPACT REPORT

PROJECT NAME:	Dewey Square Office Building
EOEA NUMBER:	03810
PROJECT PROPONENT:	Rose Associates
DATE NOTICED IN MONITOR:	June 23, 1980

Pursuant to Massachusetts General Laws, Chapter 30, Section 62A, and Section 10.05(1) of the Regulations Governing the Implementation of the Massachusetts Environmental Policy Act, I hereby issue the attached determination of scope and alternatives for the Environmental Impact Report on the above-referenced project.

The EIR should include a copy of this determination of scope and alternatives.

ALTERNATIVES

1. The No Build Base condition for comparison
2. The proposed development, as generally described in ENF 03810
3. (Optional, as the proponent desires) Any modifications or alternative design proposals for site development which may arise during the environmental impact review process.

FORM C

SCOPE OF ISSUES Studies should include:

1. Wind Impacts (pedestrian level)

Wind tunnel modeling of the general site area, with and without the proposed development, should be conducted, with calibration and evaluation of the results. The study should include evaluation of peak wind velocities, assuming wind speeds which are exceeded 1% of the time; more typical speeds may be simulated by studying wind speeds exceeded 20% of the time. All wind directions should be tested. Criteria for evaluating pedestrian level impacts should be clearly stated, including the significance of any differences between Build and NO-Build conditions.

Special emphasis should be focussed on the MBTA entrance kiosk, the sidewalks along Essex Street, entrances to the new office building, the pedestrian area in front of the South Station Head House and the entrance to the Federal Reserve Building.

The analysis should also assess any potential to create downwash effects from the Central Artery tunnel exhaust towers, thereby increasing air pollution concentrations at ground level.

The type of window glass to be used should be described, in terms of its resistance to breakage due to wind effects, and consequent danger to pedestrians below.

Mitigating potentials should be offered, particularly for any design elements which might reduce the downwash effects of wind from the tower.

2. Shadows

Shadow diagrams should be presented, reflecting 4-seasonal and morning, noon and afternoon conditions. Evaluation of the shadow impacts should include assessment of the effects on public areas and historic structures.

3. Aesthetics; Visibility; Historical

What color and texture options would be appropriate for consideration, especially relative to the South Station head house? Are there any high level or low level views which would be impeded by the proposed development?

Implication of the project on historic properties should be discussed, specifically the South Station head house. The Leather District has been mentioned for future indentification as a historic district.

4. Relationship To Other Projects

The relationship and connectivity of this development to the South Station urban renewal area, Lafayette Place and the Boston Central Artery project should be explained.

5. Transportation

An analysis should be made of the mode and direction of arrival to the site, based on overall employment and visitor activity. Because the project is intended to be primarily serviced by public transit, the capacity of the Red Line MBTA trains at South Station should be analysed, to demonstrate that auto access will indeed be minimal. If the public transit system does not have the capability to handle the increased demand, then mitigating measures such as schedule variations and car/vanpool concepts should be considered.

6. Conservation In Design

A brief description should be made of methods and effectiveness of techniques to reduce energy consumption and waste generation.

7. Construction Impacts

Design and operational practices to minimize construction noise and dust should be described.

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In terms of issue priorities, the first two topics above, wind and shadow, should be considered of major importance for analysis in the Impact Report.

MAJOR AND COMPLICATED PROJECT DESIGNATION

The proponent has requested designation of this project as a "major and complicated project" pursuant to G.L. c 30 sec 62A, in order to permit transfers by the BRA and MDPW of real property and air rights to the proponent prior to publication of a Final EIR. I consent to such designation, provided that an interim EIR (normally, a Draft EIR) shall have been reviewed prior to such transfers which demonstrates pursuant to G.L. c 30 sec 62F that a project may be carried out on the proposed land with appropriate constraints as may be necessary to minimize and prevent damage to the environment.

Consent by MDPW and BRA to this designation will be necessary prior to the making of the respective transfers. At such time as the proponent has obtained such consents, it should notify this office so that publication of this special procedure in the Environmental Monitor may take place as required by MEPA Regulation 10.10.

July 23, 1980
DATE

Samuel G. Mygatt, Jr.
JOHN A. BEWICK, SECRETARY

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